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ABSTRACT

Issues 1 and 2 (combined) of the 1995 journal contain these articles: "Accelerated Learning in a Beginning College-Level French Class at the University of Houston" (Patrice Caux); "The Psychobiology of Learning and Memory" (Don Schuster); "Do the Seeds of Accelerated Language Learning and Teaching Lie in a Behavioral Carrier Wave?" (R. M. Dunham, J. S. Kidwell, P. R. Portes); and "Cognitive Skills Training Improves Listening and Visual Memory for Academic and Career Success" (Jan Erland). Issues 3 and 4 (also combined) contain: "Course Structure for the Accelerative Teaching of French at the Technical Higher Education Institute in Kiev" (Galina Ter-Saakyants); "Integrative/Accelerative Learning as the Practice of Freedom" (Robin M. Smith); and "From TPR, NA, and SALT to ACT: Effective Language Acquisition, American Style" (Jane Bancroft). A book review is included, and tables of contents and cumulative author and topic indexes for volumes 11-20 of the journal are appended. (MSE)

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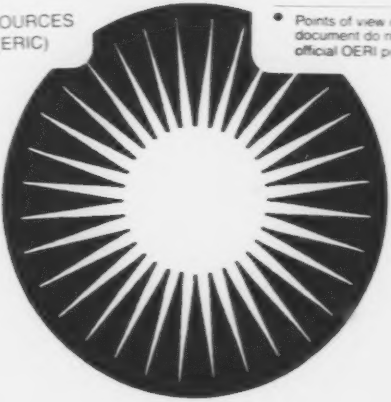

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Accelerated Learning in a Beginning College-Level French Class at the University of Houston

Patrice Caux
University of Houston

Abstract. This experiment used a non-equivalent control group (Rassias method) pre/ posttest design to evaluate the experimental group's (A.L.) performance. French language proficiency was measured by the Oral Proficiency Interview (OPI) rating., and attitude by the Foreign Language Attitude Scale (FLAS). While there were no significant differences between the small groups on achievement or attitude measures, both differences favored the AL group.

Introduction. An instructor of French at the college level often finds him/herself frustrated upon realizing that a student who, after taking two years of French, shows very little functional ability in terms of oral communication. It is crucial to evaluate the success of the first-year program in terms of its effectiveness in students' oral proficiency, for two reasons: oral-proficiency criteria are now standardized and recognized in virtually all states; students are realizing it is a skill that can be carried over to other areas of study (business administration, hotel and restaurant management, and international law). Eventually, as teachers, we will be held accountable, if we are not able to satisfy a minimum proficiency for our students. Already, this is becoming a reality for students preparing to become teachers in the public school districts of Texas (Reschke, 1983).

Therefore, in the following study, the point of focus is on students who took French in a first-year college course. The purpose of this study was to determine whether students would develop a higher level of oral proficiency in an Accelerated Learning classroom than in one using Rassias methodology. According to Asher (1981) "Americans seem to be convinced that they cannot learn foreign languages" (p. 52). Furthermore, Demado (1990) suggests that the lack of success in learning foreign languages was due to attitude and perception. However, Burt, Dulay, and Krashen (1982) argue that the adult is able to acquire a second language more efficiently when the input that is provided for acquisition takes place in a situation in which the affective filter is low. This filter is responsible for screening "incoming language based on what psychologists call 'affect': the learner's motives, needs, attitudes, and emotional states" (p. 46). Therefore, there may be a correlation between language proficiency and attitude or a positive affective disposition, which in turn may be correlated with an approach emphasizing low affective environments.

Theoretical Framework. Substantial research has been conducted evaluating the effectiveness of Accelerated Learning (A.L.). Based on results obtained during initial research (Summer of 1965) conducted by the Suggestopedy Research Group, Suggestology was considered as a viable area of research in terms of learning and teaching a foreign language. The initial study involved three experimental groups and three control groups. The groups were evaluated on quantity of words learned per day and on written tests; tape recordings of the classes were used to evaluate atmosphere and teaching manner. In terms of results and discussion, the study reported a significant difference between the control and experimental groups, based on the written tests. Also the students in the experimental groups reported relief from certain disorders such as depression, hypochondria, and fatigue.

The Research Group proposed further work in the area of pedagogy, theory, and practice. In particular, the group has proposed to study the effects of A.L. in terms of health and performance related to the individual learner in the context of other domains of study. Finally, it stresses the importance of creating a center to train and supervise teachers with the underlying purpose of addressing issues regarding pedagogy in practice (Lozanov, 1978). In the United States, Europe, and Australia, studies have been conducted in the area of retention (Gassner-Roberts, 1982; Schiffler, 1986; Rose, 1985) and in the area of music and relaxation (Hull, Moon & Render, 1984). Other studies of a comparative nature have been done in college-level German classes with significant success (Dhority, 1984; Brislan & Gassner-Roberts, 1984).

Although the Audio-Lingual methodology plays an important role in the method, Rassias includes some touches of his own: students play games and do skits; teachers do all their teaching in the target language; students are required to have twelve and a half contact hours a week. Furthermore, Rassias "believes that a dramatic approach is the only one appropriate to teaching...a foreign language (Stansfield & Horner, 1980). Finally, in his textbook, *Le Français: Départ et*

Arrivée (Rassias & La Chapelle-Skubly, 1984), he explains the learning process as inductive and deductive grammar learning, dialogue manipulation, accurate pronunciation, rapid articulation of the foreign language, active vocabulary usage, and language lab participation. There are two studies of the Rassias method showing its relationship with audiolingualism and its success in the classroom. Johnston (1983) reports positive results in the implementation of the intensive Rassias model. The criteria are a) preparation, b) initial student reaction, c) student input and motivation, d) funding, and e) teacher evaluation. The results were: students showed better results on 'traditional' tests compared to previous performances; more students showed interest in German (the target language) as a major; they were more interested in class participation than in grammar presentation. However, as the author indicates, the results in the domain of oral proficiency were "regarded at this early stage as merely tentative" (Johnston, 1983, p.359). In the "Dartmouth Experiment," Rassias (1983) reports that the scores on College board examination for French 2 students represented a midterm increase of 75 points. The students' scores on the reading and listening exams improved as well. Part of the success of the Rassias program is also attributed to the optional programs abroad and the now defunct language dormitory with target language resources (study booths and mini libraries), where students learned to survive in a community of foreign language learners using the target language to communicate in everyday settings. The studies mentioned so far do not account for success in terms of promoting oral proficiency among students except for Dhority (1984) and Brislan & Gassner-Roberts (1984). Although oral proficiency is taken into account, there is no control group, and the class structure is modified for larger blocks of time.

The researcher in the study that follows wanted to know how the approach (A.L.) would fare in a more traditional time structure (twice a week for 2.5 hours) and how it would compare with another approach (Rassias)in terms of oral proficiency and attitudes.

The following are the hypotheses that were tested: In using the A.L. method within the same time framework, it is believed that the first-year French college students

a) will reach a higher level of proficiency on the OPI (the oral proficiency interview) than students taught with the current method (Rassias method);

b) attitudes as measured on the FLAS (the Foreign Language Attitudes Scale) will be higher in the A.L. classroom than in the Rassias classroom;

c) the correlation of attitude as measured by the FLAS to achievement on the OPI will be higher in the Rassias classroom than in the A.L. classroom.

Subjects. The subjects were beginning first-year college French students. They were chosen from a morning group which met twice a week: Tuesdays and Thursdays. These groups were chosen as intact units based on the availability of qualified personnel willing to participate in the project. Each group met for 5 hours a week, with 2.5 hours per session. The control group had divided sessions between lecture and lab (session during which students drill and practice the language with an instructor); whereas the experimental group was one block for 2. 5 hours.

Procedure. As mentioned earlier, the class met twice a week for one semester. Each class session lasted two and a half hours. During the first hour, students were briefed on procedure and what to expect. Both groups were given the opportunity either to drop the course or to add another section outside the groups involved in the experiment. Because of the University of Houston's enrollment policy, it was not unusual to have a student show up two weeks after the course had begun. In a language class, this is naturally detrimental to the learning process. Therefore, the researchers determined as cut-off date the second day of class. Any students who wished to enroll after that date were not able to register for the course and any students who were enrolled but had not attended class by that date were dropped from the course. Attendance was stressed as a requirement, as in the regular class. Needless to say, students who did not come to class had difficulty keeping abreast of in-class presentations and developments. Most of the time, the foreign-language classroom was the only forum in which students were able to hear and practice the target language. Therefore, after three absences, the students were dropped from the course.

The A.L. classroom was carpeted, had moveable chairs and was equipped with all the necessary props and posters for each lesson. In the classroom, all objects were labeled in the target language with color code representing noun gender. On both the left and the right sides of the classroom there was an easel with flip-charts to use instead of the blackboard. Attached to the wall on a stand was a television with VCR, and there was a tape player for the music. The Rassias classroom was as usual. It was a regularly-scheduled classroom where the instructor used the blackboard. Otherwise, there were no visuals or props. There were times when the instructor would reserve a television with VCR which he/she used as part of the lesson.

Most of the first-year classes were taught by teaching fellows. The control group was therefore taught by a teaching fellow trained by department personnel. The experimental group was taught by an instructor who had been trained in the A.L. method. At this point, it was not feasible for the department to train a teaching fellow in A.L., because the training involves 80 hours of preparation and is very expensive. For both the teaching fellow and the instructor, the approach was new. The instructor had teaching experience, but had only taught one class in Accelerated Learning. The teaching fellow was trained but had no experience in the classroom. This may have been a limitation in the study. However, the situation as described was the normal state of affairs. The researchers tried to compensate for that weakness by gathering the data the second semester.

Although the study began in the first semester, the data were not gathered until the beginning of the second semester. The researcher believed that there would not be any differences in the first semester because most students had French in high school. Students who have had two years of high school French usually place into first-semester French at the University of Houston. This level of placement could be attributed to the fact that upon entering college many students do not attend to their foreign language requirement right away. As a result of this lapse of time between French in high school and college, students forget much of what they have learned in high school and end up taking first semester French. Another factor involved in this particular situation was that the students knew they were involved in an experiment: each student signed a consent form at the beginning of the year. By the second semester (time during which the data was collected), the students were accustomed to the instructors, and the extraneous variables such as the halo effect, the Hawthorne effect, and researcher expectancy would not be so threatening to the internal validity of the study.

Both groups were given a pretest (Attitude survey) at the beginning of the second semester and a posttest (Attitude survey) at the end of the semester. The OPI (Oral Proficiency Interview) was administered at the beginning of the second semester and at the end of that semester. In addition, the students were tested in reading and writing during the semester. These latter results were used only to compute the final grade in the course and were not included as part of the data of the experiment.

A record of the drop-out rate was carefully kept. This record included students who dropped on their own accord and those who were dropped by their instructor.

Instrumentation. The Oral Proficiency Interview is taped and is later rated by the interviewer. It is a very long process, but it has proven to be effective in determining language proficiency (Brynes, Buck, & Thompson, 1989). As for interrater reliabilities and internal consistency reliabilities, the results were "unusually high." In speaking, writing, and reading the correlation matrix exhibited discriminant validity in all required comparisons, except for listening where "only three of the required 12 comparisons were met." In terms of construct validity, all four skills assessed exhibited convergent validity by the MTMM (multitrait-multimethod) validity criteria (Dandoli and Henning, 1990). Also, Dugan (1988) found high correlations between the MLA speaking and listening tests and the Oral

Proficiency Interview. Correlations of .72 and .73 with a p<.001 were found for the first semester of French. For the second semester, the correlations were lower but significant: .49 and .64 with a p<.01.

The Foreign Language Attitude Scale has already been tested for reliability and validity. For reliability, the coefficient alpha was computed. "An internal-consistency estimate of reliability of approximately .90 for the FLAS (see appendix b) suggests that it is a homogenous instrument" (Raymond and Roberts, 1983, p. 1241). For validity it was used as a predictor of Foreign Language grade. The other two measures combined with FLAS in the equation were the Modern Language Aptitude Test and the students' High School Grade Point Averages. The multiple correlation of .58 (p<.001) led the researchers to believe that "FLAS made a significant contribution to the prediction of FL grades" (Raymond and Roberts, 1983, p. 1245).

Design and Analysis. The experiment was conducted in a non-equivalent control group pretest-posttest design. The classes were intact groups. The experimental group received the A.L. treatment, whereas the control group was taught according to the Rassias method. Both the treatment and the control groups were tested before the course began and tested after it ended. For the study, the investigator did an analysis of covariance for attitudes and proficiency scores pre and post, using the posttest as the dependent variable and the pretest as the covariate. To measure the relation of attitudes to proficiency, a Pearson product-moment correlation was used to do the analysis. In all hypothesis testing, the .01 level of probability was utilized. This level of probability helped guard, to a certain extent, against the dependence of subjects within each group: this was a limitation in this study.

Results. In both cases (hypotheses 1 and 2), tests for homogeneity of regression indicated parallel regression slopes. For both the control and experimental groups, the slopes of the regression line of the O.P.I. predicting posttest from pretest were parallel. The initial test was insignificant, indicating that a common slope could be assumed: $F\ (1,\ 17) = .11$; $p<.75$ As for the FLAS pretest and the FLAS posttest, the same was found to be true. The test again was insignificant indicating that a common slope could be assumed: $F\ (1,\ 19) = .00$; $p<.97$ Having tested for homogeneity of regression and determined that the interactions for both measures were not significant, it was concluded that the assumption had been met, thereby, making it possible to conduct an Analysis of Covariance.

Hypotheses 1 and 2. In using the Analysis of Covariance, the means of the posttest measures are adjusted to account for differences in the covariate, which in this case is the pretest (FLAS and OPI). The adjusted means on the dependent variable are the means that are determined according to the covariate average. The adjusted means, therefore, are a reflection of variance due to the treatment variable, after having eliminated the effect of the variance of the pretest. Having eliminated the difference among groups through the use of the covariate, one can then attribute a difference in means to the treatment variable, which is in this case the A.L. and Rassias methods. This characteristic of the Analysis of Covariance, to eliminate differences between groups at the pretest level, reduces the extraneous variance and renders the analysis more powerful.

It was not possible to reject the null hypothesis in the first and second cases. In other words, there was no difference between groups on both attitudes and oral proficiency. The pretest on the FLAS was significantly related to the FLAS posttest F(1, 20) = 8.36; p<.009 However, the relation of the OPI pretest to the OPI posttest only approached significance, F(1,18) = 5.56; p<.02 The difference in means was not significant at the .01 level: OPI, F(1,18) = 5.17; P<.03; FLAS, F(1, 20) = .34; P<.56 See Table 1.

Table 1. Adjusted posttest mean scores and standard deviations by training group

Group	N	Mean	S.D.
FLAS			
Rassias	11	82.79	7.35
Accel. Learn.	12	84.11	4.58
OPI			
Rassias	9	3.34	0.87
Accel. Learn.	12	4.33	1.23

There was, however, a difference in means in both cases, which pointed in the direction of the first two hypotheses: the results on the attitude scale and the oral proficiency interview would be higher for the A.L. group.

Hypothesis 3. The hypothesis stated that there would be a stronger relation between OPI posttest and FLAS posttest for the

Rassias group than for the A.L. group. An interaction of group by FLAS posttest was conducted to determine whether or not there were any differences in slope. The null hypothesis in this case could not be rejected either. No significant difference between the two groups was found as far as the interaction was concerned: F(1, 15) = 1.33; p=.26

Correlations among all four variables (OPI pre and post; FLAS pre and post) were determined. The only significant correlations were the OPI pretest to the OPI posttest (.44) and the FLAS pretest to the FLAS posttest (.58). This relation between the covariates and their respective dependent variables was already revealed with the Analysis of Covariation. See Table 2.

Table 2. Correlations among variables

Variable	*FLAS*		*OPI*	
	Pre	Post	Pre	Post
FLAS pretest		.58	-.08	-.15
posttest	.58		-.01	.11
OPI pretest	-.08	-.01		.44
posttest	-.15	.11	.44	

Discussion. Although the results were insignificant at the .01 level, they did point related to the FLAS posttest $F(1, 20) = 8.36$; $p<.009$ However, the relation of the OPI pretest to the OPI posttest only approached significance, $F(1,18) = 5.56$; $p<.02$ The difference in means was not significant at the .01 level: OPI, $F(1,18) = 5.17$; $P<.03$; FLAS, $F(1, 20) = .34$; $P<.56$ See Table 1.

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posttest	.58		-.01	.11
OPI pretest	-.08	-.01		.44
posttest	-.15	.11	.44	

Discussion. Although the results were insignificant at the .01 level, they did point in the direction of the hypotheses tested. The third hypothesis, which tested the relation of oral proficiency to attitudes, was an exception. There was no difference in relation detected between the two variables. However, concerning the attitudes and oral proficiency relating to method, further research is necessary to determine whether or not attitudes and motivation are independent of oral proficiency and method.

Because no control variables were used at the time the FLAS was administered, it was not possible for the researcher to determine what construct was actually being assessed. The FLAS tapped attitudes about foreign language and academic achievement relating to foreign language learning and foreign culture. However, what was really being measured could have been the students' attitudes about the process of learning a foreign language and how they felt in response to this process.

Another limitation of the study was the small sample size. For logistical reasons, it was not possible to involve more than a control and an experimental group for the study. However, the attrition rate for both groups was the same. It was in large part attributed to conflicts in schedule, personal problems and course requirement. In some cases, students needed only one semester of

French, which explained why they did not continue into the second semester. Generally, the students in both groups were taking French as a requirement and had no intention of continuing after having fulfilled that requirement. Given the limitations of the study, that is the small sample and the lack of more control variables, the experiment is instrumental in that it gives direction for future research.

Regarding the hypothesis attributing a higher oral proficiency to A.L., there are three central issues. First, it is interesting to note that although the control group covered more material than the A.L. group, the oral proficiency results were higher for A.L. than for Rassias. It is important to note that the difference between the means is almost one. According to the OPI scale, this is a significant qualitative difference. The scale has four levels and each level, except for the highest level, is subdivided into sublevels. Each of these sublevels represents a qualitative change in competence on the part of the speaker. Therefore, there is a definite qualitative difference in terms of competence for the experimental group as compared to the control group. This observation implies that the A.L. method might be more thorough in its presentation and practice of the material, following the Cummins'(1981) model of progression through context-embedded-cognitively-undemanding to context-reduced-cognitively-demanding materials, which is not the case in the Rassias model. The material in the Rassias model is practiced in a mechanical way, making it difficult to use in an authentic situation as in the Oral Proficiency Interview. There is more material to cover and less time for the students to practice and become familiar with it.

Second, the students in the A.L. group seemed less inhibited about speaking than those in the Rassias group. This was evidenced especially by the observations made by the teachers of both groups. They observed that the students in the control group seemed more apprehensive about going to the interview than those in the experimental group. This impression was also confirmed by the number of subjects in the control group that did not participate in the OPI pre- and posttest. This observation may confirm Krashen's (1982) affective filter hypothesis. When the affective filter is low, the learners feel at ease and self-confident. On the other hand, it is high when the learners are anxious and unsure of themselves. For example, we remember that the students in the A.L. group seemed less apprehensive than those in the Rassias group about being interviewed. In other words, Accelerated Learning was effective in creating a low filter or reduced anxiety.

Third, if A.L. was effective in creating a low filter, there is a strong possibility that the students' oral proficiency is related, if not to other affective variables, to inhibition as in Guiora's theory of the language ego. According to his theory, learners develop ego boundaries which later, in the adult years, become difficult to penetrate. The learning of a foreign language creates an identity conflict that impedes the learning process in terms of foreign language. The ego that identifies with the native language of the learner is inhibited and has a hard time letting go to assume an identity associated to the target language (Cited in Brown, 1987). By taking on another identity (by assuming a name and profession in the target language and developing the character associated to that identity), it is possible that the students in the Accelerated Learning class were less inhibited than students in the Rassias class. These observations are substance for further research and need to be addressed if A.L. is to gain a foothold among the ranks of tested and proven methodologies.

Although the difference on the FLAS between the two groups was not as large as for the OPI, the least squares mean for

Foreign Language Attitude scale on the posttest was still slightly higher for the experimental group. This result is interesting in that it suggests that the attitudes are methodologically independent. However, on the other hand, because of the slight difference, it is possible that the attitudes were affected in the experimental group because of the sense of community that developed among the students; in this case, the attitudes would not be related to language nor methodology but to group dynamics, which develops very easily in the Accelerated Learning group.

Also, the students in the experimental group started a French club and three among them decided to participate in the U.O.H.'s Summer program in France. No such manifestations were observed in the control group. Although attitude is a more global construct relating to motivation and to a student's perception of self and others, it seems more permanent and, therefore, less prone to manipulation. However, as was mentioned earlier, the FLAS might not have been adequate in assessing attitudes in terms of learning a foreign language. Therefore, attitudes about academic achievement and learning a foreign language may not have been appropriate. It would have been more suitable to measure attitudes about the process of learning and the feelings generated in response to the process. The lack of any significant result for the third hypothesis (that there would be a higher relation of attitudes to oral proficiency for Rassias than for A.L.) may support this inadequacy of the FLAS in measuring attitudes and feelings relating to foreign language learning. Nevertheless in this study, according to the FLAS, attitude seems unrelated to methodology and uncorrelated with oral ability.

In summary, the researcher believes, in spite of the results, that if one implements Accelerated Learning in a college setting where the hours are reduced and fragmented compared with those in a pure A.L. setting, students seem to benefit in terms of a better learning experience and a higher level of oral proficiency. Although the approach demanded more work and preparation, the experience was much more rewarding. These same students who were part of the study continued with A.L. into second-year French, where they learned to improve on their skills in the foreign language. They left the program having had a positive experience.

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Resumen. Esta investigación usó un grupo non-equivalente control (método Rassias) pre/post prueba diseño para evaluar la realización del grupo experimental (Aprendizaje Acelerativo). La habilidad francesa fue medida por la Oral Pericia Entrevista (OPE) tasación y la actitud por la Escala Actitudinal a Lenguas Extranjeras (EALE). Aunque no hubo diferencias significantes entre los pequeños grupos, ambas diferencias apoyaron el grupo AA.

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The Psychobiology of Learning and Memory

Donald H. Schuster

Abstract. This paper presents an overview of the psychophysiology of learning and memory from current research as reported in Rossi (1993) in three successive steps of communication: mind-brain, brain-body, and body cell-gene.

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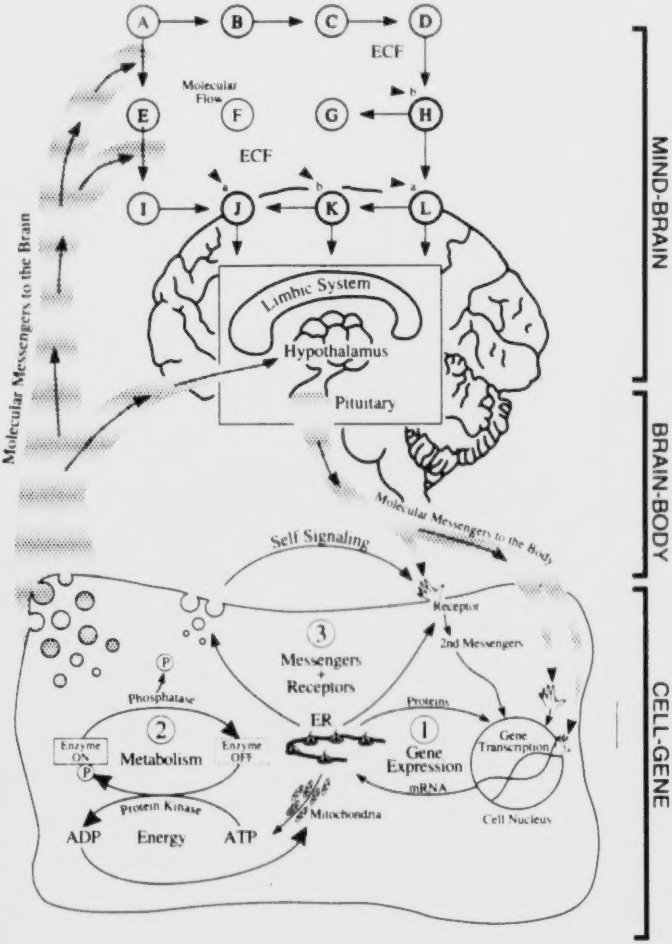
Introduction. In order to produce accelerated learning (AL), we need first to understand the basics of learning and memory. Let's consider the problem in three stages: How do mind and mood (thoughts) affect memory and behavior (brain)? How do messenger molecules (hormones, growth factors, etc.) produced in the brain communicate with the body? How do these messenger molecules tell the genes in our cells (body) to express themselves to promote growth, healing and memory in all cells in our brain and body? This overview is a review basically of Rossi's excellent book, *The Psychobiology of Mind-body Healing* (1993).

Mind-Brain Communication

These levels or stages are depicted again in Fig. 1 (reprinted by permission from Rossi, 1993) where the focus is on communication: mind-brain, brain-body and cell-gene. The nerves are there, but developed later. Messenger molecules evolutionarily were the original forms of communication, and even today, every single nerve in our brain has its activity modulated by messenger molecules. Messenger molecules are the final common denominator in psychosomatic communication between mind, emotions, learning, and behavior in health and illness (Pert et al, 1989).

This molecular insight into mind-body communication resolves many problems: faith healing, learning under stress, hysterical behavior, to mention a few. State dependent coding of memory, learning and behavior under stress mediated by messenger molecules can account for our erratic behavior that is not accounted for by relying only on our neural circuits. Nerves are not the only form of mind-body communication; messenger molecules are the original, holistic and pervasive communication between all cells of mind and body.

Fig. 1 *Overview of Mind-Body Communication and Healing*


A
B
C
D
ECF
Molecular Flow
E
F
G
H
b
ECF
a
b
a
I
J
K
L
Limbic System
Hypothalamus
Pituitary
Molecular Messengers to the Brain
Molecular Messengers to the Body
Self Signaling
Receptor
2nd Messengers
3
Messengers + Receptors
P
Phosphatase
Proteins
ER
2
Metabolism
Enzyme ON
Enzyme OFF
P
1
Gene Expression
mRNA
Gene Transcription
Cell Nucleus
Protein Kinase
ADP
Energy
ATP
Mitochondria
MIND-BRAIN
BRAIN-BODY
CELL-GENE

The major regulatory systems of mind-body communication are the autonomic nervous, endocrine, immune and neuropeptide systems. They are not independent of each other, but coordinate their functioning via the same messenger molecules that encode state dependent memory, learning and behavior (SDMLB).

Mind-brain communication shown at the top of Fig. 1 is the stumbling block for most people concerned about consciousness. There is much we don't know about the interaction of mind and body. However, there is some little known already about how the mind communicates with the brain via words, emotions, images and sensations, as well as how intercommunication between brain and body works via molecular messengers. Rossi (1993) believes that we have cellular level chemical recordings of traumatic events which he calls State Dependent Learning, Memory and Behavior (SDLMB); a more familiar term to psychologists might be an engram. Rossi hypothesizes that SDLMB with its messenger molecules going all over the mind-body is the bridge between mind and body.

This is the problem of consciousness, awareness and attention. An example is paying close attention to an engaging conversation in a very noisy room: How do you focus on only one set of stimuli and ignore the multitude of extraneous stimuli clamoring for your attention? Crick & Koch, 1990) summarize their explanation: The neurons attending to the engaging conversation fire in a semi-synchronous fashion all roughly together at about the same time, while the neurons attending to other stimuli fire in an erratic random fashion. This synchronized activity during attention releases some chemical substance that persists for 2 - 10 seconds, thus constituting short term memory. Thus awareness and attention in the mind have a corresponding short term memory in the brain chemically.

The Crick and Koch model states that our mind phenomena of attention, memory and world view are mediated by two processes: 1. Synchronized neural oscillations coordinate the relevant components of our experience into a gestalt, and 2. This synchronized neural activity generates some chemical substance that encodes these mind experiences into memory. In support of this idea is the work of Gray et al (1992) who reported a 40 Hertz neural oscillation in visual perception; other reports confirm this idea. Crick & Koch cannot as yet specify what this chemical substance is, but it certainly fits what Rossi calls a messenger molecule. What is known is that the master messenger molecule ACTH (adrenocortotropic hormone) is released in the hypothalamus about 15 seconds after stress. This hormone aids memory and goes to the adrenals, gonads, thyroid and pancreas for stress adaptive responses.

Fig. 1 depicts how environmental stimuli such as light, food, temperature, touch and bacteria all are in communication with the entire mind-body down to the genetic level. The top part of Fig. 1 illustrates how sets of neurons in the circles A through L encode a chunk of state-dependent mental experience. Messenger molecules from the body and brain coordinate this mind experience via oscillating waves of synchronized neurons that ultimately get transformed back into more messenger molecules to the body in the limbic-hypothalamic-pituitary system.

Brain-Body Communication

The major factor in brain-body communication is the limbic-hypothalamic-pituitary system, which is like a great funnel taking in information from neural nets all over the brain and transforming it into messenger molecules for distribution throughout the body, including of course the brain itself. See Fig. 1 again. The essence of this brain-body communication is the presence of hypothalamic cells that transform neural activity into messenger molecules. Thus neural brain activity is transformed into body neuroendocrinal information. The pituitary gland is the master gland regulating most of the endocrine hormones (messenger molecules) intended for the body.

The limbic-hypothalamic-pituitary system and the closely associated hippocampus in the brain play a key role in memory, learning, emotions, behavior and psychosomatics. However, there are no final answers on the basic anatomy and functions of the hypothalamus; different medical texts seem to show something different for this major mind-body communicator depending on the authors and functions being discussed. The hypothalamus is not an easily identifiable, discrete organ such as the heart or lungs; rather it is made up of many neural centers of mind-body control. Careful study of them indicates they are all concerned with the regulation of our internal environment via the autonomic, endocrine, immune, and neuropeptide systems.

The Hypothalamus and the Autonomic Nervous System. The hypothalamus is the focus of the brain's limbic system, but rather small for its important functions: about the size of a pea and weighing a few grams. It is the junction between higher cortical functions and lower structures involved in bodily physiology. The hypothalamus in the middle of the limbic system sends its output downward through the brain stem to the reticular formation and upward to the cerebrum via the limbic cortex. The hypothalamus indirectly affects cerebral function strongly via controlling the reticular activating system in the brain stem.

While the pituitary is regarded as the master gland regulating all other hormones of the body, the hypothalamus controls even the pituitary. For example when perceiving pain, part of the signal is sent directly to the hypothalamus even before the pain is experienced consciously. Conversely, events in the mind can influence the hypothalamus with its specialized neurons to regulate the pituitary.

The Hypothalamus and the Endocrine System. Whatever we conceive mind to be, we intuitively feel that it is associated with the activity of our manifold brain cells and their many interconnections, estimated to be more than the number of atoms in the universe. Nerve cells in the arcuate nucleus of the hypothalamus produce hormone releasing factors into the blood going to the anterior pituitary. From here the endocrine hormone prolactin is secreted to turn on milk secretion in a woman's breasts. Other cells in the paraventricular and supraoptic nuclei in the hypothalamus receive impulses from higher cortical sources and produce the hormones vasopressin and oxytocin. These messenger molecules are stored in the posterior pituitary until release during stress to regulate kidney and other organ function. Thus many cells in the hypothalamus transform mind-neural information into somatic effectors through the pituitary endocrine system. Note: vasopressin acts to improve memory and oxytocin to worsen memory.

Most recently recognized is the regulatory hypothalamic influence on the immune system. This area is new but some of the psychophysiological mechanisms whereby the hypothalamus can modulate cell and humoral immune activity in cancer, rheumatism and asthma are known. (Ader, 1981; and Stein, Schleifer & Keller, 1981). For example, a growth endocrine hormone is produced in the pituitary and hypothalamus. Under stress, this is converted into oncogenes to cause the excessive growth of cancer. Normally this is stopped by the neuropeptide Interleukin IL2 from the bone marrow and spleen. This counters cancer by stimulating production of T and B white blood cells.

The hypothalamus is a known center for neuropeptide activity, but its detailed functioning is speculative in transforming neural impulses into hormones for the body. The neuropeptide system appears to overlap the autonomic, endocrine and immune systems as they all use neuropeptides as messenger molecules to talk to each other. Due to its pervasive and flexible communication, the neuropeptide system may be the most multifaceted channel for information transduction and the expression of state dependent learning, memory and behavior.

Cell-Gene Communication

The third level of mind-body communication is shown in the bottom of Fig. 1 as cell-gene communication. Warning: here we are not simply reducing communication, mind and life to the molecular level! Rather, now we need to regard physics, chemistry and biology as branches of psychology, specifically focusing on information and communication. Leading textbooks in biochemistry, biology and genetics now use mentalistic communicative terminology with such concepts as messenger molecules, signaling, signal recognition particles, communication, information, sentient molecules, symbolic systems and metabolic codes to describe life processes at the molecular level. (Alberts et al., 1989; Darnell, Lodish & Baltimore, 1990).

Now we consider information exchange and communication cybernetically at the cellular-genetic-molecular level of mind-body, behavior and the environment. Refer to the bottom part of Fig. 1. Here there are at least three major loops of intracellular communication: 1. Receptor receiving stations that pick up the primary messengers from the brain to turn on/off gene expression, 2. The energy metabolic loop involving enzymes and mitochondrial "energy generators" to power metabolic life functions, and 3. The "protein factories" that make more receptors and messenger molecules to communicate back to the brain and other parts of the body. Here we will treat only sensation, perception, learning, emotions, memory and behavior during stress. Actually we are starting a new science, infokinetics, the life processes that transduce information, energy (kinetics) and matter into each other.

From Intracellular Receptors to Gene Expression. The first link in the communication pathway within the cell is the receptor network symbolized as hands in the bottom of Fig. 1. Each cell in the body and brain has many thousands of receptors of one family or other. Candace Pert (1985) summarized a century of research on cellular receptors into a theory of a psychosomatic network that forms the basis of all mind-body healing. As an example, the endorphins, internal opiates produced in the brain during pleasure, are just one family of primary messenger molecules that integrate functioning of the brain's central nervous system with the autonomic, endocrine and immune systems. Yet other primary messenger molecules can pass right through a cell's walls and match up with receptors inside the cell. Many of the most important mind-body functions considered in psychotherapy are mediated by such direct links. For example, the steroid messenger molecules mediating stress (cortisol), sexuality and aggression (testosterone and estrogen), and also growth (thyroxine) all have direct access to intracellular genes.

Secondary Messengers and the Evolution of Communication. Did communication first begin some four billion years ago when the first living cells in a drying up water puddle invented *cyclic adenosine monophosphate* (cAMP) as a signal to clump together to form a tough skin to survive the coming dry spell? *Cyclic adenosine monophosphate* has a long evolutionary role as a regulatory molecule. In bacteria, cAMP is a hunger signal leading to enzyme production capable of using other sources than glucose, the basic energy source. In higher organisms, cAMP mediates intercellular signaling rather than intracellular signaling, as well as helping regeneration and nerve growth. The role of cAMP in the common slime mold *Dictyostelium discoideum* is interesting. When food is plentiful, *Dictyostelium* exists as separate cells rather than clumping together. When food is scarce, cyclic AMP is secreted as a stress response by the amoebae which attracts other cells to clump together to form a slug with major changes in gene expression. This was a critical evolutionary step between single and multicellular life. The invention of communication when stressed by a changing environment was necessary for survival, adaptation and evolution of higher life forms.

In humans under stress, cAMP continues to play an important role. Glaser et al (1990) reported supporting objective data; in medical students under the stress of final exam week, the cAMP link alters the gene expression of their IL-2 receptors to reduce their immune responses to common infection.

At the cellular level (bottom of Fig. 1), stress and messenger molecules modulate the expression of genes. This involves gene transcription, making copies of certain groups of genes, something we do continually. These copies act like blueprints sent as messenger molecules (mRNA) to the protein factories in the endoplastic reticulum where they serve as templates to manufacture new proteins serving three functions: 1. Transcription regulator proteins return back to modulate the expression of other genes as shown in the bottom of Fig. 1. 2. Other proteins serve as enzymes which facilitate cell functions such as energy production, growth, healing, etc. 3. Still other proteins serve as building blocks for remodeling and replacement of the communicative network to the rest of the body.

Let's see how this can apply to neuroses, mental illness acquired through learning and often responsive to psychotherapy for unlearning. Kandel (1989) suggests that neuroses might involve alterations in gene expression in their regulatory and coding regions. Psychotherapy may work by re-altering the altered gene expression within the body's cells. Learning in general involves a flow of information intracellularly from membrane receptors to the genome for cellular growth and differentiation.

The Energy-Metabolic Communicative Loop. The second major loop of information transduction within the cell is shown at the bottom of Fig. 1 and labeled as "energy" and "metabolism". Messenger RNA expressed in the genes is transformed into structural cell elements and also into enzymes serving metabolism and life in general. Some proteins are carried to the mitochondrial energy factors which convert the basic fuel glucose into the energy exchanger adenosine triphosphate (ATP) to use in life processes and stress responses. Physical exercise increases the number of mitochondria which in turn produces more energy than before. A key enzyme here is phosphorylase kinase, one of many protein kinases found in all body cells. This protein kinase switches the energy rich ATP on and off to power all metabolic processes.

Alkon (1992) has documented how secondary messenger molecules working with protein kinase can regulate the flow of potassium ions in neural transmission in learning experiments. He believes that the experiences of mind are all based on molecular patterns of information transduction in the neuronal nets in the brain. Malfunctioning of these memory mechanisms may be responsible for Alzheimer's and other dysfunctions of aging. The essence of psychosomatic illness may be a problem in the communication with the messenger molecule receptor system within the cells.

Continuous Creation of the Messenger Molecule-Receptor Communicative System. Most of the proteins within the cell with key regulatory roles have a half life of two hours or less, reminding us of the dynamic wavelike nature of learning and memory. Messenger molecules and their receptor systems serve two major bridging functions between mind and body: 1. They are the major pathways of communication between and within all the regulatory systems of mind and body, and 2. They serve as the ultimate keys for the state dependent encoding of personal emotional experience.

In summary, the four major systems of self-regulation in mind-body functioning are:

1. The autonomic nervous system uses molecular messengers or neurotransmitters between nerves, to facilitate the activity of the sympathetic nervous system for optimal performance, as well as that of the parasympathetic nervous system for relaxation and healing. Messenger molecules convey neural impulses from the end of one nerve to the next nerve.
2. The endocrine system uses hormones as primary messengers to regulate metabolism, growth, etc. with emotions, memory and behavior.

3. The immune system uses cytokines as messenger molecules to signal the leukocytes, white blood cells, in the defense against disease, viruses and cancer.

4. The neuropeptide system uses neuropeptides as messenger molecules to modulate the central nervous system, the peripheral nervous system and our sense organs. The neuropeptides are neuromodulators with their effects on emotion, pleasure, pain, stress, trauma, learning and behavior.

Rossi (1993, p. 155) speculates that the protein kinases (about 1000 varieties) are the analog of transistors and integrated chips in computers. As an example, phosphorylase kinase (PK) is concerned with energy metabolism within the cell in all life, where it facilitates adding the phosphate radical to produce adenosine triphosphate (ATP) needed in metabolism. Thus protein kinases are involved in memory and learning. Specifically, protein kinase works with calcium ions as PKC to regulate potassium flow in learning. Aging and Alzheimer's disease interfere with this process to result in forgetfulness.

Messenger molecules (MM) according to Rossi (1993, p. 159), are: 1. the major pathways of communication throughout the mind-body and its regulating systems, and 2.

the ultimate keys for state dependent encoding of personal experiences for memory and learning.

Some primary messenger molecules (MM) are the neurotransmitter catecholamines in the autonomic nervous system. The first such MM is norepinephrine released at sympathetic nerve endings under stress. The second such MM is acetylcholine released by parasympathetic nerves under relaxation.

The mind controls cells in the brain to regulate attention, learning and memory. In the hypothalamus at the base of the brain, corticotropic releasing factor (CRF) stimulates production of adrenalcortotropic hormone (ACTH) going to the adrenal cortex above the kidneys to produce cortisol MM. The hypothalamus also stimulates the anterior pituitary to generate the antidiuretic hormone (ADH) vasopressin which not only controls kidney functioning and blood flow, but also in the brain enhances learning and memory. Table 1 summarizes this messenger molecule information.

Table 1. Major Memory Messenger Molecules

Acetylcholine - an endocrine monoamine neurotransmitter released at parasympathetic nerve endings during relaxation, and going to the autonomic nervous system (ANS), GI tract, heart, lungs, pupils.

Norepinephrine (NEP) - an endocrine monoamine neurotransmitter produced in the adrenal medulla above the kidneys and in the ANS. Constricts most vascular blood vessels (arteries) during fight or flight stress response.

β **Endorphin** - opium-like neuropeptide made in the spinal nerves during pleasure. Goes to limbic-hypothalamus-pituitary in ANS at the base of the brain. Blocks pain transmission.

Growth hormone - endocrine hormone released in the hypothalamus and pituitary at base of brain. Involved in memory. Under retrovirus stress, converted into oncogenes to cause excessive growth (cancer), but normally stopped by tumor suppressor genes.

Adrenocortotropic hormone (ACTH) - master messenger molecule released in the hypothalamus at base of brain about 15 seconds after stress. This hormone goes to adrenals, gonads, thyroid and pancreas to help adaptive stress responses.

Vasopressin - an endocrine hormone made in posterior pituitary at base of brain. Enhances learning and memory in brain's 24 hour daily cycle. Goes to endocrine glands: adrenals (on kidneys), gonads, thyroid (throat), pancreas.

Oxytocin - an endocrine hormone released in the posterior pituitary and in the uterus during labor. Causes forgetting. Goes to adrenals (above kidneys), gonads (sex organs), thyroid (in throat) and pancreas.

Cholecystokinin (CCK) - an endocrine hormone produced in the intestinal tract and related to gut feelings of fullness. Goes to adrenals, gonads, thyroid and pancreas.

Interleukin IL2 - a neuropeptide produced in bone marrow and spleen by the immune system. Involved in memory, but also counters cancer and toxins very effectively by stimulating T and B cells. Goes to hypothalamus at base of brain, spleen, GI tract, white blood cells (leukocytes).

Interferon - a neuropeptide released by T cells and macrophages (garbage eater cells). Increases immunity to infection and cancer. Goes to hypothalamus, spleen, GI tract, leukocytes.

Substance P (pain) - a neuropeptide produced in the brain stem and dorsal horn of the spine. Facilitates pain transmission & ouch (!) learning. Goes to gonads, GI (gastrointestinal) tract, immune & endocrine systems.

Cyclic adenosine monophosphate (cAMP) - an evolutionary neuropeptide generated on cell surfaces under stress that signals genes in the cell nucleus. Tells cells (and perhaps us) to clump together for group survival. Helps promote memory, nerve growth & regeneration.

Discussion

To summarize, messenger molecules and their receptors are the bottom line of mind-body communication, learning and healing. They take their place along with words, emotions, images and sensations in the information transduction loop between mind, brain, body, cell and gene. We can bridge the gap between mind and body only with this broad inclusive view of information and communication.

So far we have had a current overview of learning and memory processes, from mind to brain to blood to body to genes. One conclusion seems inevitable: Memory is stored in all cells of the mind-body. Learning and its memory are stored in the cell genes, probably involving many genes simultaneously similar to a hologram. Future research will have to tell us the details.

It's also clear that memory exists before nerves are formed and present in an organism. Let me introduce a personal note here, research for my Master's degree in psychology at the University of Minnesota back in the 1950's. (Fredericks, 1961; Schuster, 1953) I was interested in prenatal learning, so I did one classical conditioning experiment with chick embryos being incubated, and another with pregnant rats. In both cases, the conditioning occurred about two-thirds of the way through the prenatal or pre-hatching period at the time when the auditory nerve connected up with the inner ear, and thus the developing organism could hear. I was able to show in these controlled studies that it was possible to establish a conditioned response in chick embryos seven days before hatching, and that this conditioned response persisted up through hatching without intermediate reinforcement and two days afterwards. A similar result obtained with the female rats: a conditioned response established seven days before birth by shocking the mother electrically persisted without intermediate reinforcement through birth and shortly thereafter in the rat pups. The conditioned rat pups were significantly more hyperactive in response to the conditioned stimulus of a bell's ringing than were the controls.

This work probably could be extended to include the possibility of learning much earlier in the prenatal period. At the time I thought that the auditory nerve had to be connected to the inner ear in order for conditioning as elemental learning to take place; now I think differently.

We have covered the mechanisms for learning and memory. What about variables important to accelerated learning, such as joy, music and suggestion? Joy definitely has been shown to be present in learning: The hormonal endorphins and enkephalins associated with pleasure and generated in the limbic-hypothalamus have been shown to be involved in emotional processes with learning and many learned mood disorders (Rossi, 1993). The role of music is obscure psychobiologically; music probably leads to relaxation (production of more enkephalins) as well as providing a richer stimulatory environment (a bigger network for cells recording learning and memory). The role of suggestion is to create more mental activity (thoughts) that directly lead to longer lasting cellular networking for learning and memory. The use of the dramatic has a sound psychobiological basis (Rossi, p. 268) to arouse and utilize the mind-body's capabilities in learning and change. The use of drama engages the person more fully with creative imagination, and is one of Lozanov's (1978) suggestive means. The future will show the details.

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Resumen. Este artículo presenta una sobrevista de la psicofisiología de aprendizaje y memoria de investigación contemporánea como presentada por Rossi (1992) en tres sucesivos pasos de comunicación: mente-cerebro, cerebro-cuerpo, y corporal célula-gene.

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Do the seeds of accelerated language learning and teaching lie in a behavioral carrier wave?

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Abstract. Accelerated learning may be achievable by research leading to the identification of variables and configurations of variables which may then be exploited as necessary and sufficient conditions. Even the possibility that this is true may imply that accelerated learning is not merely some curious modern product of science and social engineering. The possibility may imply that accelerated learning has been a natural and inevitable process under some conditions in the history of the species. Nor need the implication concern only the rare or dramatic. The present report describes demonstrable and normal conditions of human interaction which may reflect the existence of a predisposition to learn rapidly and well. A carrier wave model of parent-child intelligence

exchange is presented on the basis of family interaction research.

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May we find the roots of effective learning and teaching in the most basic and universal dimensions of the mother-child interaction? If an interaction of mother and child is structured to elicit learning, will it assume a form that may lead us to a better understanding of the hereditary qualities and capabilities that characterize the human as learner? From such an approach may we find our way to the genetic processes that characterize better and faster learning? The present writing is offered to call attention to an interpretation of learning theory and a class of variables which may be implicated in accelerated learning. If so, they also will imply various conditions for effective teaching. The present article reviews evidence for a behavioral carrier wave hypothesis that is important for advancing our understanding of learning and teaching.

Scientific psychology has been closely involved with pedagogy over all the years of its modern existence. Beginning with the work of Lozanov in the 1960's, a set of techniques has been identified that offer hope of supporting accelerated learning. These techniques fall under more general terms such as Suggestopedia, Superlearning, Psychopädie and SALT (Felix, 1992; Schuster, D.H. & Gritton, C.E., 1986). Writers have searched for the limits of the set of techniques, experimenting with various components or combinations. They have sought to understand the psychological and physiological conditions for accelerated learning. They have attempted to place their views in the context of broader or more historic human or intellectual considerations.

This report's interpretation which falls in the latter category. The results of an experimental intervention which reported accelerated learning are interpreted within the framework of the biology of species adaptation. Specifically, the report offers an interpretation of accelerated learning as emerging, prototypically, in the early stages of socialization, equally in all human societies, in the interaction of mother (or caretaker) and child.

The present writing outlines a theory of intellectual development as it is influenced by the style of verbal interaction between parent and child. Questions are addressed concerning the extent to which cognitive functioning should be considered to be a property of the individual, of the primary group, or of the social macro structure, of organization of communication activities, and how it may be derived from genetic and environmental interactions.

The theory has evolved from cumulative findings from an early-age, anti-poverty intervention and its ten-year longitudinal follow-up. The cumulative findings have led to the formulation of a general hypothesis which may be stated as follows: there is a specific, balanced, and elegant core pattern of behavioral interaction and socioemotional bonding between parent and child, to be referred to herein as the Behavioral Carrier Wave (BCW). The BCW is suggested to be a principal interpersonal verbal mechanism for cognitive growth. Furthermore, it is thought to be teachable/learnable and to be stable across both childhood and adolescence, and perhaps beyond. It may also be modifiable from one developmental stage to another to produce gender differences and other distinctive developmental outcomes. It may be useful, then, in understanding both normal and pathological outcomes and in the design of interventions for primary prevention. Findings from related studies also are offered as supportive evidence for the theory.

Background. Recent writings on the importance of educational intervention programs have tended to focus on understanding the role of relevant interpersonal dynamics in the parent-child relationship and whether these may mediate intellectual growth (Bronfenbrenner, 1986; Zigler & Berman, 1983). it has been suggested that the mediating effect may be best captured in the close verbal exchanges between the child and the primary caretaker (Tulken & Kagan, 1973; Ramey, Campbell, & Nicholson, 1973). Furthermore, it has been argued that "...early intervention which includes the caregiver is usually more effective since the caregiver has more and continued contact and is apt to be more reinforcing to the child than other adults" (Allen, Afflect, McGrade, & McQueeney, 1984). Some of the evidence supporting this view indicates that cognitive development in children may be a linear function of the amount of relevant parental attention (Marjoriebanks, 1976). More recently, it has been suggested that lasting intervention effects on family behavior may mediate continuing positive effects on intellectual ability (Portes, Dunham, King & Kidwell, 1988). These findings point to the wisdom of interventions which offer the greatest promise of affecting parental attitudes, values, and relevant interpersonal processes of the parent and child. Clarke-Stewart (1973), for example, asserted that "...the role of intervention research ought to be experimental manipulation of maternal interactive styles so as to determine conclusively whether changes in parental behavior result in changes in child behavior." To date, however, there remain little data from which to draw conclusions concerning the long-term effects of the use of parents as intervenors (White & Casto, 1985).

The Early Intervention and its Findings.

The early intervention reported here was an intensive, whole-family, anti-poverty program conducted from 1968 to 1970, called Project Know-How (PKH). The original sample was comprised of 90 mother-child dyads from intact families, divided equally into three groups: lower class experimental, middle class control, and lower class control. Each group contained an equal number of black and white families. The three groups were identified by the Hollingshead Index of Social Position (1958). After satisfying Federal poverty standards, the low SES families were randomly assigned to groups. They fell at the lowest Hollingshead classes. The middle class control group fell at the upper middle class Hollingshead levels. The children were between the ages of one and two when the families were recruited and the program continued until the children were between the ages of three and four. Children were administered the Bayley Scales of Infant Intelligence at approximately age two-and-a-half, and the Stanford-Binet Test of Intelligence around age three-and-a-half. The experimental group children and their mothers participated for four hours a day, five days a week for two years. A brief description of PKH is included below. A more detailed description is available elsewhere (Dunham, 1973; Dunham, Portes & Williams, 1984).

The two broad goals of the intervention were: 1) to normalize the mental development of the disadvantaged child, and 2) to strengthen and stabilize the families in support of the socialization of the child. The intervention included three major components; The Children's Program, the Mother's Program and the Father's Program. In the Children's Program broad attention was given to cognitive, language, social and motor development as well as health, nutrition and physical growth. This was accomplished, in part, through the medium of a discovery-learning nursery school experience, further enriched by a number of structured language-learning elements, some of which were drawn from the work of Palmer (1976) and of Schaeffer (1971).

The Mother's Program was designed to improve effectiveness in all aspects of parenting and homemaking. Mothers were employed half-time in the role of Assisting Mother, while receiving training in health, nutrition, communication skills, child development, and other basic areas of home economics. The program drew mothers heavily into the training of the children. It provided them with considerable social support while they were in training in a range of competencies.

The Father's Program was, at the time, unequaled in intensity and quality. It focused on family life and parenting, education, occupation and citizenship, using a mixture of counseling techniques and human relations-training techniques.

The early findings included data on the measures of intellectual growth. On the early cognitive measure, the Bayley, there were small, but non-significant differences between the three groups. Near the end of the intervention, mean scores for the experimental group on the Bayley had increased significantly, while mean scores for the two untreated groups remained relatively stable. Similarly, variability in scores increased for the experimental group but remained relatively stable for the untreated groups. There were no apparent gender or ethnic effects in the Bayley scores. However, ethnic effects were apparent in the Binet scores, but only for the untreated groups. The intervention, then, appeared to mitigate emerging ethnic differences in intellectual development (Dunham, Kidwell & Portes, 1988).

There also was evidence that during the intervention the experimental group mothers made gains in both verbal ability and in the positive quality interaction with their children (Crown, 1969). Additionally, Dunham, (1966) found that the incidence of negative forms of attention by mothers toward their children decreased sharply and that of positive attention increased. Intervention mothers used largely aversive control at the beginning of the project, but in the second year the ratio of positive to total exchanges exceeded 90 percent. This was far less than the 60 percent negative attention reported by Hess and Shipman (1965) for mothers in their low socioeconomic status group. (See Dunham, 1973, for relevant recasting of the Hess and Shipman data).

The Ten-Year Follow-Up. For the ten-year follow-up, 54 mother-child dyads were located. This included 19 experimental, 18 low SES and 17 middle SES control dyads. The children were between 12 and 15 years of age. There were approximately equal numbers of males and females in the sample (25/29).

The black-white ratios were also approximately equal (29/25). Further information on the follow-up design and the sample may be obtained in Portes, Dunham & Williams (1986).

Follow-up interviews were conducted in the families' homes. Observations were made of the mother and the child in an interactional problem-solving task involving hypothetical situations. These were designed to elicit discussion of conflict-provoking but common adolescent-parent problems. Disciplinary style of the mother also was observed, and coded on level of punitiveness, using a modified form of the Jackson Scale (1956). Overall, the estimated reliability for all interaction measures in the study was .87. In addition, data were collected on children's school performance on the California Test of Basic Skills (CTBS), which provided component scores on Reading, Language, Math and Reference Skills.

Findings from the ten-year follow-up of PKH have been published elsewhere. The principal, immediately relevant, findings were as follows: In the first study (Portes, Dunham & Williams, 1984) a factor analysis of behaviors observed in the mother-child interaction task revealed three factors, accounting for 53 percent of the variance in the interaction measures. The first factor, referred to as Participatory-Democratic Interaction (PDI), distinguished behaviors that characterized mutual involvement by both mother and child in decision-making situations, where both spoke freely and listened well. For the first factor there were social class and ethnic differences, but the treatment group so excelled the lower class control group as to leave little doubt that an enduring treatment effect on mother-child interaction had been attained. The other two factors, referred to as Mixed Dominance Interaction and Mother-Controlled Interaction, did not significantly distinguish the groups.

In an attempt to demonstrate coherent patterns of disciplinary practice, a subsequent study (Portes, et al., 1986) factor analyzed the data of Jackson's (1956) scale of the punitiveness of disciplinary practice as applied to the mother-child interaction data. A single bipolar factor emerged which is referred to in the present writing as J1. A high score on J1 was associated with maternal acceptance and information-giving. A negative score reflected assertion of authority, punishment, and deprivation by the parent. J1 discriminated race and social class. Scores on the J1 also were significantly more positive for the treated group than for the lower class control group.

In the third study (Portes, Dunham, King & Kidwell, 1988) promising interaction measures obtained from the parent-child interview were factor analyzed to reveal possible underlying patterns of interaction. The principal factor that emerged was named Participatory Style of Interaction (PSI). This single factor was stable and strong, accounting for 62 percent of the common variance. It appeared to describe the extent to which the mother-child interaction was participatory and democratic, permitting spontaneity and openness. The PSI also reflected a positive, accepting, and approving valence (J1). It strikingly differentiated groups by social class, race, and experimental condition. The items and factor of scores are reproduced here for ease of understanding the PSI. See Table 1.

Scores based on the PSI factor were calculated for each mother-child dyad and used in subsequent analyses as an index of maternal interaction style. Two major conclusions were drawn from the Portes, et. al. (1988) study: 1) Early intervention altered low SES mothers' interactive style a decade after program participation. That is, the intervention succeeded in moving the lower class experimental families away from a relatively non-communicative, authoritarian

Table 1. Factor Loadings of the Mother-Child Participatory Style of Interaction (PSI)

Behavior	By Child	By Mother
Interruptions		
Unsuccessful	.74	.56
Successful	.64	.57
Jackson measure (disciplinary style)		.50
Speech Duration	.63	.36
Questions	.62	.35

and punitive style and toward a verbally active, participatory, non-punitive style. The effect size (Glass, McGaw & Smith, 1981) for this difference was over three-fourths of a standard deviation; 2) when interactive style was used as a predictor of intellectual development, it was found: a) to mediate long-term changes in school achievement, and b) to sharply reduce the variance in achievement test scores associated with the demographic measures.

In a fourth study, Dunham, et. al. (1988) examined the continuity of mental development from early childhood to early adolescence, as it is influenced by parent-child interaction and socioeconomic factors. Using scores from the early Bayley and Binet they found small but insignificant social class differences in mental development at the onset of the intervention. By the end of the intervention social class differences were more evident in the control groups than in the experimental group. Social class differences in the untreated groups remained important ten years later.

At the ten-year follow-up, small residual effects were evident for the treated group considerably larger than White and Casto's (1985) finding of .10 after only 36 months post treatment.

PSI also was found to be significantly related to three of the four CTBS subscale scores for the experimental group, but not for either of the control groups. In a regression analysis the early cognitive measures were of no predictive value in later cognitive measures. In the presence of Bayley, Binet, sex, race, experimental condition and PSI, PSI accounted for the largest amount of variance in CTBS scores.

Theoretical Extensions: The Behavioral Carrier Wave cumulative findings from an intensive anti-poverty intervention and its ten-year follow-up data have suggested that a participatory, democratic, and positive verbal style of interaction between parent and child was learned in early childhood and persisted into early adolescence. Furthermore, those families in the experimental group who best learned the participatory style tended to have adolescents who performed better on the cognitive achievement measures.

From these results, we might concur with Bronfenbrenner (1986), Tulken & Kagan (1973), Ramey, et. al., (1973) and others that the effect of an intervention may not lie solely in the "mind" of the child who has benefited by an intervention, but in the interpersonal processes of the family activity setting. That is, an intervention effect may be stored in an altered pattern of interpersonal exchange that may persist over years and mediate additional consequences of the intervention.

It may have become apparent to the reader that the interpretation of developmentally arrayed data in a study such as this invites analysis within both a tradition of learning theory and also within a re-awakened tradition of behavioral genetics (or, more accurately, genetic behaviorism). The possibilities for genetic interpretation fall in two particular categories, one related to individual differences in measured intelligence, language and parenting behaviors, and the other devoted to describing the fundamental characterization of our species as a whole.

Our data have been produced within an experimental design which cannot support conclusions about genetic bases of individual differences. There is no degree-of-kinship variable, for example. More important, all our data are taken from groups of people who, by definition, are genetically, as well as socially related. Thus, we find no basis for rejecting the relevance of the following perspective remarks by Hardy-Brown, Plomin, and DeFries (1981): "Parental behaviors and characteristics, which constitute environment input to the language-learning child, also serve as estimates of genetic contribution to the child for these same abilities."

"Under these circumstances, correlations observed between parental behavior and child language development may be due to environmental or genetic influence, or both."

"The role of genetic influence in producing individual difference in language development need not imply immutability of any aspect of language behavior."

If we cannot deal confidently with individual genetic differences in the present report, we can with the implications for the species definition. The data fall nicely within the grand sweep of anthropological and developmental conclusions concerning the genetic commitment of homo sapiens to parent-infant bonding, prolonged dependency, language acquisition, and cognitive mastery.

Behavioral Carrier Wave. The BCW may be thought of as an analogue to the function of radio waves for radio transmission. A radio sends out a wave-form transmission at a standard frequency or wave length. In and of itself it carries no infor-mation except concerning the existence of the radio transmitter, and, of necessity, a radio receiver which detected the existence of a signal. A radio, however, is typically thought of as transmitting information in the form of voice and/or music. We do not usually focus on the underlying radio wave, which is a carrier of the information. The information is carried by the radio wave for transmission, by a process of modulation of some aspect of the wave, usually its amplitude or frequency.

The PSI factor may be taken to be a measure of the BCW in this study. By analogy, we may say that the PSI describes a stable process of behavioral emissions, characteristic of a given dyadic interaction. Once established it is stored in the social system as a standard process of exchange between the members of a dyad; it is adequate to carry a broad range of cognitive content. It may be thought of as a fundamental behavioral operation between the members of the dyad that is readily modulated to carry the widest range of information.

It follows that dyads in which this BCW has not been established will be less adequate in supporting cognitive development. It also follows that a stronger carrier wave, which might consist of varied scripts, might support extensive information-sharing, leading to rapid cognitive growth and to perhaps other positive outcomes. Henggeler, Edwards & Borduin (1987), for example, found that there were lower levels of facilitative information exchange in families of delinquents than in families of well-adjusted adolescents.

The PSI factor suggests that the negatively toned end of the carrier wave distribution is punitive and suppresses the interaction of the parent and the child, contributing, in turn, to a reduced capacity for the delivery of socializing experiences. A behavioral goal of parent involvement in educational interventions may reasonably be to alter the particular component behaviors of the PSI.

Furthermore, the carrier waves may differ and reflect culturally-organized functions of several "address variables" (e.g., social class and ethnicity). Blacks and the lower class were distinctly lower on PSI than were and developmental conclusions concerning the genetic commitment of homo sapiens to parent-infant bonding, prolonged dependency, language acquisition, and cognitive mastery.

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Furthermore, the carrier waves may differ and reflect culturally-organized functions of several "address variables" (e.g., social class and ethnicity). Blacks and the lower class were distinctly lower on PSI than were whites and the middle class, suggesting that this wave may be a mediator betwen culture and achievement.

There are precedents for the notion of a BCW in the literature on the early predisposition to relate socially and on the importance of early and prolonged dependency for human cognitive development. The term "docility" has often been used in the educational community to refer to an open, but not uncritical, cooperation in the learning process. The concept of "tutor-proneness," used by Bruner (1972), implies a readiness to learn through observation and instruction. The concept of "human educability" was used by Dobzhansky in 1969, to refer to a universal and adaptive human predisposition, relating to a mixture of tendencies to bond in the primary group, learn language, and develop cognitively, all in the interest of surviving and becoming a competent member of the society. The term "numinosity" has been used to refer to a mental state characterized by rapid learning at key developmental passages under intense pressure from the "cosmic forces" or principal cultural themes of a society (Dunham, Kidwell & Wilson, 1986). It is paradoxical that humans gain the freedom of self-determination, by being predisposed to relate in a benign and dependent manner at those points throughout life in which important new learning is possible or required.

How is it that the PSI emerged so strongly in early adolescence, where one might predict that characteristics such as dependency, bonding, docility, educability, numinosity, and tutor proneness may not fit well with the stereotype of the 13-year old who is beginning to strive for individuation. The answer may lie in the ability of the BCW to adapt to developmentally-based changes in the needs of the members of the interactive dyad. It will be recalled that the PSI contains some role differentiation and that the participation of the child is a key to the success of the interactive process. The developmental demands of the pubescent child may begin a redefinition of the interactive process to accommodate needs for differentiation (Kidwell, Fischer, Dunham, and Baranowski, 1983).

Whatever the early shifts in the form of this BCW may be, the version tapped by the PSI factor loads on items which might be conspicuous in many key socializing exchanges throughout late adolescence and adulthood. Its mastery by early adolescence or sooner may portend its use in intimate relationships thereafter. Without much further alteration it might also serve in future, more public, relationships that are patterned on the model of parent-adolescent exchange, such as that between supervisor and employee or teacher and student.

Plomin, Lochlin & DeFries (1985) reported a rotated factor for the HOME-scale, which reflected maternal emotional involvement, and included behaviors such as praising a child's qualities and conveying a positive feeling when speaking of the child. Their factor correlated .25 with the Bayley at 24 months in non-adoptive homes. Plomin, et. al., did not find a comparable correlation between the Bayley scores and another rotated HOME scale factor, called Restriction/Punishment. It is worthy to note that their two unipolar factors, taken together, resemble our bipolar PSI factor and may be showing similar effects on the Bayley whether the interaction style is measured contemporaneously or much later, in adolescence. Furthermore, the pattern of data over these two studies seems to support an early and continuing relationship of cognitive attainment with an active and positive style of parent-child interaction.

Other researchers have reported results which seem to: 1) identify PSI-like factors early in childhood and in infancy; 2) demonstrate a link between these factors and verbal development, both early and in later childhood; 3) show demographic differences in levels of the combination of the PSI-like factors and some measures of verbal or cognitive attainment; 4) show treatment effects of intervention on one or both the PSI-like factor on cognitive attainment; 5) reveal shifts whereby the PSI-like factor varies in behavioral content and becomes more clear and coherent from age to age; 6) suggest that the PSI-like factor structure is bipolar, running from approving, accepting, active, interactive and informative at one end to rejecting, punitive, dominating, and stultified at the other; 7) demonstrate that a PSI-like factor may account for and replace much of the predictive power of demographic variables.

Hardy-Brown, et al., (1981) have suggested that there may be many aspects of parental speech, of parenting, and of parent characteristics which serve as variables in studies which search for the contribution of the social aspects of environmental process to the development of language and cognition in the child. In their study, they used a relatively broad array of measures of the child's early verbal and other communicative behavior. They also used a broad array of measures of potentially related parental characteristics and behaviors. Their data suggested that the interactive quality may depend on the child's tendency to closely observe and imitate the mother and the mother's tendency to imitate and respond to the child. A reciprocity is implied in the earliest stages of verbal, and indeed preverbal interaction. Elardo, Bradley and Caldwell (1977) found factorially derived subscales of the HOME instrument, one called Emotional and Verbal Responsivity of Mother and another called Maternal Involvement with Child which predicted language competence at three years of age from observations of family life at ages six months and 24 months. Their measures of the mother-child relationship predicted language competence better than did socioeconomic status. They found some evidence of black-white differences in the effectiveness of the prediction.

Normal-Jackson (1982) found effects on verbalization in early childhood and success in reading at ages 7-8 from substantial differences in levels of parental and sibling encouragement and discouragement during early childhood. Encouragement and discouragement were factorially derived clusters, one involving approval and shared activity, the other involving punishment and rejection. Her subjects were low income, black families.

Farran and Ramzy (198) reported a principal components analysis of ten parent and child behaviors which yielded a first component of age, called "Dyadic Involvement." Their data indicated differences by social class, and suggested a treatment effect with intervention families as well at 20 months, but not at 6 months of age. High Dyadic Involvement scores at 20 months of age were associated with higher scores on the Binet at 47 months. Dyadic involvement was bipolar, with mutual activity, vocalizing by mother and child, and demonstrating toys or reading to the child by the mother at the positive pole, and mother and child acting singly at the negative.

Cohen and Beckwith (1979) studied the relationship of competence by several measures to caregiver interaction with preterm infants at one, three and eight months, and two years. They found evidence for the predictive power of PSI-like factors at all four ages. They also found evidence of considerable continuity in the measures of care-giving. There were no sex differences in care-giving. Their factor analytic results were as follows:; at one month, the first factor was "social." It included social play, contingent response to vocalization, and mutual gazing. At three months, the first factor, called "responsive social," included contingent responses to vocalization and comments. At eight months, the first factor, called "mutual social," included face-to-face talks, attentiveness, and mutual gazing. At two years, two unipolar factors accounted for 77 percent of the variance in their data. The first, called "positive caregiver attentiveness," included positive reciprocal interactions, positive attentiveness, questions and utterances to child, and response to child's vocalization. The second, called "negative attentiveness," included mandates, criticisms, interferences, and rejections.

The research reported in the present study has several methodological advantages, including direct observations with behavioral indices at two important developmental points and data reduction by factor analysis. It also attempts to relate specific interactive behaviors between the parent and child with specific developmental changes in cognitive development. In these characteristics it meets many of the requirements called for by Farina and Dunham (1963) and by Wachs (1983). Further studies are needed which examine important traits such as intellectual development from a longitudinal design involving both individuals and families and which reflect both child and adolescent conditions.

There is, of course, a danger of falling into a reductionistic focus on whatever few measures of environmental process show the strongest relationship to language behavior and cognitive development. There may be a whole galaxy of relevant environmental phenomena. The most likely interpretation at this point in the history of science may be that none of the phenomena occur accidentally and that each will show its relevance as studies occur which make it possible. The most general defensible hypothesis may be one, such as that offered by Snow (1977), that "conversation with an interested adult" is what counts.

Nevertheless, there is some congruity in the findings in the literature on the relationship of language development and cognition with the interaction of parent and child. The more powerful predictors available thus far seem to imply mutuality, bondedness, interdependence, acceptance, approval and an operant or proactive quality. This may be a crucial core of observable behaviors, the Behavioral Carrier Wave.

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Resumen. ¿Discubramos las raices de aprendizaje efectivo en las dimensiones básicas y universales de la influencia mútua de madre-niño? ¿Si una influencia mútua de madre-niño sea construida para producir aprendizaje, tomará una forma que nos conduzca a un mejor entender de las calidades hereditarias del aprendero humano? De tal acercamiento encontremos nuestra senda a los procesos genéticos que caracterizan el aprendizaje mejor y rápido. Se ofrece este artículo para prestar atención a esta intrepretación y tales variables que sean importantes en el aprendizaje acelerativo. Este documento presenta la evidencia por un hipótesis de una onda aprobante de conducta que es importante para avanzar nuestro entender de aprendizaje y enseñanza.

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Cognitive Skills Training Improves Listening and Visual Memory for Academic and Career Success

by

Jan Erland

Abstract. The author presents the rationale and background for her cognitive skills training program and experimental data to support its effectiveness in improving academic achievement.

Introduction. 1990 ushered in the "Decade of the Brain" and with it came research to further explore how intelligence can be improved. Intelligence requires high levels of information processing capability for an individual to excel academically, and rapidly learn systems and new technologies in the workplace (Sternberg, R. J., 1990).

When we cannot quickly process complex information and think critically, we find ourselves behind in world economic competition, at the bottom of the educational ladder, and not qualifying for better paying jobs. Trapped at certain career levels, we wonder how to increase income and job satisfaction.

Searching for answers, we overlook the obvious: we must create a process for learning (*Creating The Future*, Dickinson, 1991) and increase mental proficiency. Individuals now can reach optimum levels of learning capability through a specialized training procedure. Problem-solving and critical thinking cannot be left to chance or incidental workbooks and seminars. We must look at the foundation of learning: training information processing, thus creating higher levels of intelligence and critical thinking (Sternberg, R. J., 1992).

Available Cognitive Skills Training Programs

From the late 1950s, into the 1980s, two significant cognitive skills training programs existed: (1) Reuven Feuerstein's *Instrumental Enrichment/Mediated Learning* (E/ML) (Feuerstein, R., 1980, 1956), and Mary and Robert Meeker's *Structure of Intellect* (SOI) (Meeker, M. N., 1969) which was applied in Japanese schools from the 1970s until today.

A third cognitive skill training (curriculum-and-instruction, C & I) program, *The Bridge To Achievement (BTA)* (Erland, J. K., 1994a) is available for schools, businesses, centers, and industry. Since 1981, learning specialist Jan Erland, has researched, developed, and implemented *The Bridge To Achievement (BTA)* cognitive skills training curriculum for individuals ages 9-adult. The multi-media program features 24-hours of intensive encoding-decoding drill and practice sessions to develop information processing capability.

Before students can comprehend reading material and technical text, perform stepwise procedures in mathematics, follow directions, understand science and a foreign language, they must have adequate listening and visual Short-Term Memory structures. With many students and workers, these skills are underdeveloped. Most curriculums do not address these mental abilities. Auditory memory (listening) training programs are few, and often require individualized instruction with a Speech Pathologist. Therefore, the average student flounders when trying to learn typical course content and office procedures, due to low listening comprehension ability.

The BTA objectives are to improve memory and cognitive skill functioning for all students, at every learning level. Thereby, students can follow oral and written instructions quickly and accurately, develop an increased accuracy for visual and written detail, develop organizational skill, perform numerical computation problems accurately, read and understand complex information, interpret charts and diagrams, and think critically. Pattern-Detection and Sequencing-Skill Training promotes being "Quick on the Uptake" when learning new material for systems and technologies. By rapidly encoding and decoding information, high retention rates result (Kamhi, A. G. & Catts, H. W., 1989; Sternberg, R. J., 1985).

The program is available in four training formats: 10- or 15-Day for small group intensive (1 1/2 hrs. daily, Mon-Fri), and 8- or 12-Week for group training in schools or industrial settings (30 min. daily, Mon-Fri). Field testing statistically documents substantial academic results in reading comprehension, vocabulary, math computational skills, math concepts, ability to follow directions, and problem-solving. The BTA curriculum can supplement whole-language and mathematics curriculums in schools and learning centers, and can serve as an adjunct program to workforce training in business and industry.

The Meeker *Structure of Intellect (SOI)* program (Meeker, M. N., 1969), used in schools and for the workforce, applies visual workbooks with computer software applications. The Feuerstein Instrumental *Enrich-*

ment/ Mediated Learning (IE/ML) program (Feuerstein, R., 1980, 1956), also implemented primarily in schools, applies visual workbook lessons.

The *Bridge To Achievement (BTA)* builds upon this instruction by adding auditory components forming an interactive multimedia technology. Innovative coding and chunking drills on computer programs and video- audio-tapes with worksheets, pave the way to higher-order thinking.

Media Applications Offer Entertaining Instruction

Albert Bandura's *Social Learning Theory* (Bandura, A., 1971) principles state that if material is interesting and motivational, a person will retain it. Bandura's precepts and J. Piaget's *Theory of Intelligence* (Piaget, J., 1950) require models with star qualities to enhance learning. This media method is an application of Kaufman & Kaufman's Simultaneous vs. Sequential Dichotomy (1983). Global right-brain learners learn to think sequentially. Analytical left-brain individuals learn to engage in global, visual thinking. The rapid shifting of global, patterning input to sequential output, through the video and audio chunking systems, facilitates whole-brain learning (Erland, J. K., 1994b, 1992, 1989a).

The Bridge To Achievement's exclusive chunking system offers instruction for left-brain sequencing of complex information basic to algebra, reading comprehension, written communication, procedures, spelling, computer processing, and critical thinking.

The multi-media system, *The Bridge To Achievement* (Erland, J. K., 1994a), applies these theories using celebrity identities. A comic art theme dominates. Vivid, live action characters, mimicking celebrities, teach how to chunk information on video. One-by-one, the character faces appear close-up on the screen and speak chunks of information, forming a sequencing system.

By choosing and identifying with favorite celebrities, the student eliminates self-consciousness when speaking with the characters (Decker, P. J., 1985). Through this personality identification, the participant models after the video characters.

This synthesis- sequencing rotation of the voices and faces (encoding-decoding of patterns and systems) is the basis for The Bridge To Achievement's training. The technology of using vocal intonation by the five character impersonators expands upon Suggestopedic (Lozanov, 1978) accelerative learning. The video- and audio-tape technology can be developed into CD-ROM applications.

A Solid Research Base

Two published research reports including longitudinal results, (Erland, 1989a, 1989b), on the application of *The Bridge to Achievement* System indicated that 40 experimentals, ages 10-55, made robust improvement on standardized cognitive skills test measures. Test instruments for the pre- and post-tests included the Detroit Tests of Learning Aptitude-1 (Baker & Leland, 1935; 1967), and the Woodcock-Johnson Psycho-Educational Battery (Woodcock, R. W., & Johnson, M. B., 1977). The entry level intellect of the 40 ranged from developmentally disabled to gifted. Fifteen were learning disabled with a variety of learning problems.

Participants were assigned to small instructional groups according to age and pre-testing entry ability levels. They practiced Pattern-Detection and Sequencing-Skill training lessons, 90 minutes daily, five days a week, for three weeks. This included 24 hours of intensive encoding-decoding sensory integration training, excluding assessment time.

Post-treatment assessment immediately followed the training, and additional longitudinal testing one-to-three years post training. All ability levels, from low to high, benefited from the training by increasing their information processing capability.

The Gifted students, including some Gifted-Dyslexics, excelled in school. They have entered professions, or embarked on prestigious careers. The Learning Disabled went on to college or technical school and, without tutorial assistance, graduated and obtained self-supporting jobs. Some became professionals. IQs increased by 20 - 40 points. There were no failures in the BTA treatment group, and the improvement was enduring.

A subsequent data-base of 523 individuals ages 9 - adult was administered the Woodcock-Johnson Psycho-Educational Battery (1977). Before the training, the group's average was at the 64th centile in visual processing, and at the 58th centile auditory memory processing. Following The Bridge To Achievement (The BTA) training, the average was in the 84th centile for visual memory processing, and in the 89th percentile for auditory memory processing. The published longitudinal report verified that memory and thinking retention . maintained.

A fifth grade public school class of twenty students made up a field test study (Erland, 1994b). A no-training control group was randomly selected from the teacher's previous four of fifteen teaching years. The experimental fifth grade class had the media-driven Pattern-Detection and Sequencing-Skill, The Bridge To Achievement training; the other group did not. The BTA training was for 30 minutes of chunking practice of encoding and decoding lessons. Training continued four days a week, for 12-weeks in the Spring semester.

Achievement was measured by the Science Research Associates (SRA, 1985) standardized achievement tests. Changes were stated in standard scores. To test the hypothesis that training would affect Reading scores, students' pretest and posttest centile scores on the SRA (1985) achievement tests were first converted to standardized, Normal Curve Equivalents (M=100, SD = 15). Then, separate ANCOVAs were calculated for Reading, Mathematics, Language Arts, Social Studies, Science, and Reference Skills. Consistent with prediction, video-training students evidenced greater Reading improvement than did no-training students, F(1,35) = 10.16, p< .003. Grade Equivalent or GE gains were 3.7 for Experimentals, and 1.76 years for the Controls.

Although not predicted, a similar pattern was also evident for Mathematics, F (1, 35) = 18.24, p < .001. GE gains were 3.22 for the experimentals and .95 for the Controls. Between-group differences for Language Arts, Social Studies, Science and Reference Skills did not approach significance.

The standard score gains in Reading and Mathematics for the entire Experimental group were strongly correlated, r (18) = .67, p < .001, whereas this correlation was not significant for the no-treatment group, r (16) = .38, p > .10 Although not predicted, this finding suggests that the shared variance of Reading and Mathematics gains was due to The Patterns and Systems video-taped training. The class began the school year with a mean fifth grade ability, and left with a mean functioning level between eighth-ninth grade in Reading and Math (Erland, J. K., 1994b).

The Reading and Learning Disabled students in this experimental fifth-grade classroom setting also showed marked improvement. Special Needs students' improvement exceeded that made by the Control group by at least one years' growth in both Reading and Math. By junior high, several had their RD/LD classifications removed, and became independent learners (Erland, J. K., 1992).

Longitudinal data were obtained for 16 of the 20 students in this pilot fifth-grade study, for the two years subsequent to the training. Data showed the gains maintained. The students were still performing at elevated eighth to ninth grade levels in Reading and Math in the following sixth and seventh grades.

Information Processing Is Foundational To Learning Achievement

Many learners have difficulty with mathematics and science, and are unaware that their underdeveloped visual and listening memories contribute to low achievement in these areas. As few as 15% of high school seniors enroll in calculus, physics and chemistry (Staff, Nation At Risk, 1983). With Information Processing skill fundamental to learning proficiency, (Sternberg, R. J., 1985) administrators, teachers, and trainers must identify workable systems not only to ease demands and their own work load, but to achieve the necessary academic results for Outcome-Based Education and Total Quality Performance requirements.

Specialized cognitive training is a two stage process. First, quick, resilient information processing capability, with memory and cognition skill, is required before higher-order thinking skill can take place (Woodcock, R. W. & Johnson, M. B., 1977).

When listening and visual sequential memory levels are strengthened to aid reading and math skill proficiency (Kaufman, A. & Kaufman, N., 1983), then, one can become proficient with science, technological and higher-order thinking skills.

The forthcoming book, *High Performance Thinking: Conquer Information Overload* by Jan Erland, tells us how we can identify our weak mental abilities, understand how our listening and visual Short-Term Memories relate to our personal performance. Mental skill at all learning levels can be improved to process information faster and more accurately. Fast ways to sharpen the mind are explained, so we can eliminate information overload. The reviewed published reports reveal that with continued application, benefits accrue with time. The book includes self-checks with Patterns and Systems games, inviting readers to understand how mental toughness and agile thinking lead to peak school and work performance.

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Resumen. La autora presenta la razón y el fondo por el programa de la formación de destrezas cognoscativas y datos experimentales que apoyan la eficacia en el mejorar la realización académica.

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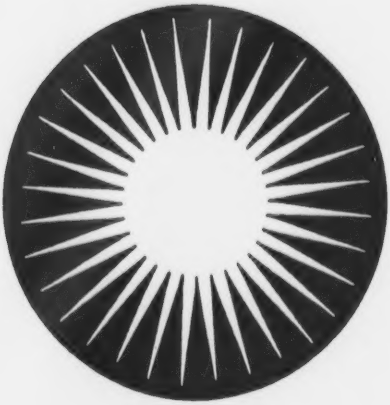

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Course Structure for the Accelerative Teaching of French at the Technical Higher Educational Institute in Kiev

Galina Ter-Saakyants

Abstract. Students attending a technical institute in Kiev were taught French during a one year period with accelerative learning techniques. French knowledge scores improved slightly (12%) in the control group, while improving considerably (67%) in the experimental group. Experimental group attitudes were quite positive.

* * * * * * * * *

The search for effective methods of instruction to impart practical mastery of a foreign language in a short period of time has a rather long history. Pedagogy, psychology, social psychology and medicine have joined forces in attempts to find ways to actualize the individual potential of the student. Under these conditions, it is not surprising that it was a physician and psychotherapist, Georgi Lozanov, M.D. (1978) who started a new "suggestopedic" school of instructional methodology.

The mandatory characteristics of a suggestopedic teaching system are: realization of the student's potential with respect to memory, cognitive activity, and overall personality, and activation of positive emotions and experiences so as to dissipate sensations of fatigue, etc.

The theory Lozanov called "suggestology" advocates activation of mechanisms that facilitate the liberation and mobilization of latent human potential for recall, assimilation, and communication. One of the means of triggering these mechanisms is "infantilization," i.e., the elimination of the anxiety that burdens the psyche of the adult, impeding his perception, and achieving a transition to an immediate level of perception. The dominant factors here are play and pleasure derived from participation and communication under stress free circumstances.

Beginning in the 1970s, Soviet scientists validated Lozanov's conception in a whole series of experiments, which yielded high quality results with regard to mastery of foreign languages. Based on the initial postulates of suggestology in Lozanov's theory, Soviet scholars (W. Buchbinder, G. Kitaygorodskaya, 1988) created an instructional system for teaching foreign languages - the Method of Activating the

Potential of the Individual and Collective (MA). Adherents of the Soviet school of Accelerative Teaching (AT), having assimilated and refined the ideas of Lozanov in their theory, enriched them with new results in education, psychology, and linguistics, and also with the requirements made by these sciences with regard to instructional methodology for foreign languages.

Research on the process of teaching foreign languages in technical institutes of higher education (vuzes) using conventional teaching methods demonstrated a great discrepancy between the syllabus requirements (practical mastery of foreign languages) and their actual embodiment in practice. After many years of studying it in school and the vuz, [so-called] mastery of a foreign language amounts to the ability to read foreign texts with a dictionary at the level of [word by word] decoding. In the majority of cases students are not able to carry on a conversation even on topics of daily life or social and cultural events, much less on professional subjects. Observation shows that frequently in a technical vuz foreign languages are relegated to second-class status, their significance as an important educational discipline is devalued and involves only formally assigning students to read a given number of difficult, uninteresting and outdated texts. As a result students lose interest, their motivation decreases, and the impression is created that foreign languages are "unnecessary" for those with technical majors.

An analysis of the syllabus for foreign languages for students in technical vuzes revealed a number of deficiencies related to the structuring of the teaching process, which was badly organized with the class time devoted to foreign languages inefficiently allocated among different activities.

The practice of Accelerative Teaching in a number of technical vuzes shows that this method is highly efficient compared to conventional teaching methods and makes it possible to achieve the instructional goals of the syllabi of technical vuzes devoted to subjects other than foreign languages.

However, study of the structure of various methodological systems of accelerative teaching of foreign languages (ATFL) revealed the lack of a theoretically based model of an ATFL course, one that encompassed the goals, tasks and specific features of a technical vuz. The search for ways to optimize the temporal parameters of the instructional process used for AL led us to develop model I of the AL structure and methodology.

Table 1. Model I of the structure and methodology of AL.

Total course duration: 2.5 years
Number of hours in a course: 360
Semesters: IV - VIII
Stages of instruction: I, II, III

Subsequent work to improve this model made it possible to formulate and develop a theoretical rationale for the principles involved in structuring a course of ALFL for students in technical vuzes. These principles are:

1. Focus on mastery of communication in a foreign language,
2. Stress on the interrelationship of the foreign language and other subjects studied by the students,
3. Coordination with the stages involved in the development of competence in speaking a foreign language, support of the requisite relationship with the triggering and functioning of the mechanisms involved in speaking a foreign language. In other words, the structure of the course must reflect the model of mastery of languages.

Study of the literature. W. Buchbinder (1988) made it possible to identify the following parameters corresponding to the stages of development of the speech mechanisms: Stage I - students achieve the minimal level of competence for communication; Stage II - stabilization of speaking competence in the foreign language; Stage III - a) ensuring that the mechanisms ensuring ability to speak the foreign language are continually functionally ready to operate,- b) at the conclusion of the course, participation of the student in all major modes of communication in the foreign language.

Table 2. Model II of the structure and methodology of AL.

Total course duration: 1 year
Number of hours in a course: 210 academic hours
Semesters: IV - VIII
Instructional phases: initial, intermediate, accelerated

We have identified a number of instructional phases (Schuster & Gritton, 1986) for an AL course, each of which is tied to the characteristics of the corresponding stage of development of the mechanism underlying speaking ability. (Rose, 1987; Schuster & Schuster, 1985). Inclusions of the aforementioned principles for constructing a course in ATFL in a technical vuz in our model led us to develop model II of the structure and methodology of AL.

There are three main types of lessons in an AL course:

I - those in which presentation of materials dominates.

II - those in which training in communication dominates.

Type II is subdivided into two subtypes:

a - those in which oral language dominates (listening and speaking), b - those in which writing dominates.

III - those in which practice in communication dominates.

In 1983-87 an inter group comparison experiment was conducted at the Kiev Engineering Construction Institute. The objective of the experiment was to determine the comparative efficacy of two models of AL structure and methodology for teaching French to students in the technical vuz.

The experimental hypothesis was that the comparison of the two structural and methodological models of AL would show that better results would be obtained using model II, since it embodies the principles for structuring an AL course.

A questionnaire was administered to assess the following psychological characteristics of the students: strength of learning motivation, readiness for group cooperation, range of interests of the subjects.

Questionnaire No. 1

Name: ____________________

1. How do you feel in the company of strangers? (Underline one:) Constrained, relaxed, is it easy or difficult for you to make friends with people? (Insert another appropriate answer if necessary.)
2. How do you react to being reprimanded in the presence of others?
3. In your own opinion, how well developed is your sense of humor?
4. Do you like to sing, dance, tell jokes?
5. Are you involved in athletics, what kind?
6. What are your hobbies and interests, aside from work?
7. Are you satisfied with the career path (major subject) you have chosen?
8. What is your dominant mood (Underline one): calm, happy, anxious, bad. (Insert another appropriate answer if necessary.)
9. What character traits do you have that you would like to alter or get rid of?

10. What do you value most of all in other people?

Questionnaire Number 2

1. I think that the study of foreign languages in a technical vuz is:

a) absolutely essential
b) necessary for a liberal education
c) desirable (optional)
d) unimportant
e) unnecessary

2. When I studied a foreign language previously, I found it

a) very interesting
b) interesting, but not always
c) neither interesting nor uninteresting
d) frequently uninteresting
e) very boring

3. Would you like to be fluent in a foreign language?

a) yes, very much
b) yes, somewhat
c) I don't know, I never thought about it
d) not particularly
e) definitely not

4. How many evenings a week could you spend on studying a foreign language?

a) 6, b) 5, c) 4, d) 3, e) 2, f) fewer.

5. Do you often seek contact with material in a foreign language (books, newspapers, magazines, radio)?

a) every day
b) whenever possible
c) infrequently
d) only by chance
e) never

A pretest was given with the objective of determining: 1) students' existing level of knowledge of the French language; 2) level of development of psychological processes and personality traits. Level of knowledge of French was assessed by establishing: a) level of understanding of the overall meaning of a text after listening to it; b) level of detailed understanding after listening; c) level of detailed knowledge after reading and reading speed; d) level of knowledge of vocabulary comprising the minimum word list for secondary school students; e) ability to recognize and understand verb tenses; f) knowledge of the major French prepositions; g) ability to speak French.

Assessment of each of these parameters was achieved by assigning test exercises. As a result of analysis of the pretest results, 24 students were selected to participate in the study, and were divided into two groups each containing 12 individuals. The control group had a moderate level of mastery of French (average score of 40.3). The experimental group had a low level of mastery (average score of 33.8). In the experiment, the control group was given accelerative instruction in French utilizing model I while instruction for the experimental group utilized model II.

Processing of quantitative results of a posttest revealed that level of knowledge of French in the control group improved from 40.3 to 45.2 In the experimental group, scores improved from 33.8 to 56.3 The corresponding gain scores and their standard deviations were, control: 4.83 (1.77) and experimental: 22.5 (5.19). This difference between gain scores was highly significant ($t = 11.17$, $df = 22$, $p < .001$). After completing the course of study both groups were asked to fill out a questionnaire to determine how the students evaluated the course and also to identify any influence of the course on a change in students' personality traits. The students of both groups evaluated the course as "very interesting," "wonderful," "it was like a holiday," "eliminated doubts about being able to master a foreign language," etc. Many expressed a desire to study another foreign language, or to write theses in French.

The results of the experimental instruction confirmed the high efficacy of model II of the structure and methodology of an AL course, which was based on principles for structuring an ALFL course for students in a technical vuz. The scope of the present article permits us to discuss only one of the problems we worked on. In subsequent articles we will discuss other aspects of AL addressed in our experiment.

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Resumen. Se enseñaron estudiantes en un instituto técnico en Kiev el francés con técnicas de aprendizaje accelerativo. Las puntuacciones de francés mejoraron un poco

(12%) en el grupo de controlo, pero mejoraron considerablemente (67%) en el grupo experimental. Actitudes en el grupo experimental fueron positivas.

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Integrative/Accelerative Learning as the Practice of Freedom

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Abstract. As an organization concerned with improving education, we need to examine the values underlying our motivation to do so as well as our practices. We need to include everyone in the process, especially anyone "disabled" or "special" in any way, and those marginalized in society at large. We need to examine didactic content and hidden curriculum, what it is that we actually teach.

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"There is no such thing as a *neutral* educational process. Education either functions as an instrument which is used to facilitate the integration of the younger generation into the logic of the present system and bring about conformity to it, or it becomes "the practice of freedom", the means by which men and women deal critically and creatively with reality and discover how to participate in the transformation of their world." (Schaull, 1970).

Our organization International Alliance for Learning (IAL) is a treasure trove of skills and wisdom. Our conference brochures and our best practices publications promote building learning communities, designing sound learning environments, lifelong learning, and the latest methods to "jumpstart your brain". We are cutting edge/21st century ... or are we?

Where are the discussions of Integrative/Accelerative Learning (I/AL) as empowering pedagogy? By empowering I mean not only the reclaiming of individual human potential but the reclaiming of community potential; not only the breaking through of logical, ethical, emotional learning barriers, but the breaking through of those barriers that reside in our accepted organizational structures and social constructions that define organizational paradigm. These structures are supported by our everyday practices.

In thinking about how to further the inclusion of people with diverse cultural perspectives, including people with mild and severe disabilities, I have identified issues that I think would be valuable to address in our organization and practice. Below I will address some apparent contradictions in our practice.

Learning process and content.

We aim to transform learners, revive the joy of learning we were born with. It is often a great leap for our students to shift into a paradigm of respecting the limitless capacities of themselves and their students. Such a transformation is a major contribution to the building of learning communities full of confident learners. Our students suddenly tap into the writer or musician or dancer within; how can they not be enthusiastic? But is it enough?

It is time to ask ourselves some hard questions. Where in our organizational curriculum is there a place to address the issues of what is actually being taught, who has a voice in our classrooms, who remains silenced. Our leaders and advocates are steeped in the philosophy that "every student is gifted", "everyone can learn"; yet are likely to respond to an idea for an inclusive program with the "What's in it for me?" This WIIFM question paraphrased is, "What are the benefits to the non-disabled students in these relationships?" By inclusion I mean, "... the integration of regular and exceptional children in a school setting where *all* children share the same resources and opportunities for learning on a full time basis." (Wang, 1981).

This WIIFM question assumes a non-reciprocal relationship and that the student with a disability is an "Other" of less value -- not as a human being, we would all be quick to add -- but as a participant in our daily life. The fact that many of us do not understand why one would take issue with such a question is understandable within the context of a society where people with certain differences are segregated at all levels of our culture. A better question might be, "What assumptions do we need to look at or change to figure out how to make it work?" If we believe that diversity enriches our lives and our learning, then we must embrace the practices of creating community where everyone is involved.

I am suggesting that we need to intentionally pay attention to how we reproduce the existing inequalities of our society. Special education teachers I meet at IAL conferences are struggling not only with incorporating AL into their classrooms, but are also struggling with the reality that in this day and age of proven best practices around inclusion and teaching, their students are still isolated from their age peers in schools. We need each other's help to solve such problems. It is not a special education issue; it is a regular education issue.

Competition, cultural codes, and power imbalance.

Much of our printed material sells I/AL in terms of becoming more competitive in the Information Age; that we must teach skills of critical thinking, creativity, self confidence, learning-to-learn, and assorted content areas because business needs them. This is a predominating perspective voiced in our meetings, workshops, and promotional material. When AL teachers address issues around children with disabilities, it is from the point of view of fixing them, making them "normal", functional in our "world class" milieus that we aspire to. We need to address our allegiance to a medical model of dealing with people who do not fit the norms that are constructed around competition and comparison. What if, in teaching all students, we saw each one as normal? How do we accommodate people who can't be "fixed" by our best practices; and who even have other perspectives about our world? How can we hold onto definitions of normal such as this one I heard from Don Campbell: "A normal person is someone you don't know very well." Competition is so ingrained as a cultural code that we don't even notice that in our AL workshops and classes we even have cases of cooperative groups competing with each other, winners and losers.

Another cultural code that dominates our network is that of individual achievement and autonomy. This is true of white middle class and upper class culture. It is not the dominant social code of many other cultures where relationships and service to the group are highly valued. We are limiting ourselves when we work only for individual transformation. How much are we teaching people to learn better and faster without questioning what they learn and what values underlie what they learn? There is a hidden curriculum of power relationships in our I/AL lessons that is worthwhile to address.

> A group of adult students are standing in a circle. The activity after a vocabulary lesson and concert reading includes a contest. The circle is divided into two semi-circles. The teacher calls out the word and the students must dive for the correct matching picture. The team with the most pictures "wins". There is spontaneous movement, laughter, cooperation within the teams.

The intent of this lesson was to engage students kinesthetically with the content. However, the student in the wheelchair sat and watched. After a few tries s/he figured out (alone) that it counted to throw the cush ball at the picture. An African American minister stood and watched; she did not have a competitive relationship with the printed word. A Native American man living with a head injury also stayed in the background. Nobody noticed, including the trainer.

The hidden messages that participants may have taken home include: The fastest students are rewarded; there are winners and losers and winners learn more; we can make it without everyone's participation; it's ok to leave some people out; productivity is more important than people; it's up to the person who is excluded by the structure of the activity to figure out how to participate; if a structure is not working for you, it's best (or at least acceptable) to remain silent. I have seen this scenario repeated in many workshops over the last ten years. I have seen culminating presentations in Integrative-Accelerative Learning training that were overtly racist, classist and sexist. In all cases the teachers are deeply committed people of passion and action, dedicated to good learning and to their students. We are not trained to notice who is silenced and excluded in our classrooms. We are not trained to acknowledge multiple perspectives of our diverse students and to correct (and teach how to correct) power imbalances in groups to improve access to learning.

Here is a contrasting scenario (Sapon-Shevin, 1991):

> I went to a course on cooperative learning. The professor had a repertoire of non-competitive games including cooperative musical chairs (when you take away a chair, the students share the remainder ... until the whole class figures out how to fit on one chair), cooperative tag, cooperative charades (teammates help each other during each person's turn). For one of the games I was consulted in advance how I might participate in a wheelchair and we figured it out together; another time peers figured it out with me.

The hidden messages that participants may have taken home include: we're all in this together; all for one and one for all; all make important contributions; each student has value. More learning happens when all participate. When there is a problem participating, you can count on the group to help figure out creative solutions. Interpersonal learning can move us toward the inclusive and just world we want to live in. Interdependence and mutual respect are valued here.

Accommodating multiple perspectives changes attitudes regarding what and who is valued, and so enhances learning. Our students and colleagues who come from groups that do not traditionally have the power in our culture have much to offer us about teaching and learning in an inclusive community. We can be leaders without creating losers on any level.

I/AL can be used to reproduce our typical relationships around gender, race, class, physical condition. Or instead we can accelerate the acquisition of critical thinking. To be truly transformative, we must move beyond better and faster business as usual. If our education is to be transformative we must assist our students and each other to question our vision of the world, to inspect it, see what is made of and whose it is, and to move beyond it; to move beyond current conditions in our world and portray a new vision. What if our students not only have a changed classroom experience, but also used their enhanced self esteem to exercise their ability to understand and analyze their own experience?

More hard questions, hopefully rhetorical.

Some of our approaches lead to smoother running learning communities, but in the process, preserve and protect privileged categories. Do we want to teach that individuals can be powerful, but that most solutions to problems are individual? ... Or do we want students to question the value of achievement at the expense of others? Do we want students to feel good about themselves or do we want them to feel good about themselves and each other? Do we want students to understand and be polite about each other's diverse backgrounds and learning styles?... Or do we want them to question that the values around other people and their "characteristics" are socially constructed? Do we want our students to be nice to students from marginalized groups, or do we want them to question why these groups are marginalized? Do we want to include only those people with disabilities or labeled "at risk" who can be "normalized" by I/AL, or do we want everybody? Do we want our students to be nice to "those people", or to question *who* decided the meanings of their characteristics that made them less important?

A call to dialogue

Our organization and the membership are now mature enough to ask ourselves these hard questions. We are an eclectic and practice-oriented group. As we look at our practices and reflect on the alignment between our theory and practice, we will grow in our power to create the world we really want.

Let us get together and dialogue in person, by letter and email to affirm our desire and our practice of I/AL as empowering pedagogy, a pedagogy that transforms society as well as individuals. I propose we hold these discussions in the context of inclusion for two reasons. Including people with disabilities cuts across all lines of race, class, and gender. Like adultism (the disrespect and disempowering of young people), it affects all of us personally. The second reason is that issues of disability are a place where otherwise progressive people draw lines in the sand. Adopting an attitude of "All Means All, Really!" can be the most exciting and rewarding challenge for us all. The third reason is that as we problem solve about the day to day practices, successes, challenges, we will become better practitioners of Integrative/Accelerative Learning for all people of differing abilities and cultures because we will have opened new pathways to learning from a variety of cultural perspectives. I think that opening ourselves to these new perspectives may help us with other sorts of issues, such as, why it is so hard to be accepted by members in the Coalition of Essential Schools: why do they think they are "learner-centered" and that we are "teacher-centered"?

RSVP

Now that we know how not to bore our students... How are we figuring out how to raise the level of empowerment and education as the practice of freedom? What are our next steps? Please respond with feedback to this essay along with your best thinking. Let us converse before the next conference track and special interest group meetings. We have the ability to support meaningful educational change.

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Resumen. Como una organización precoupado por el mejorar de educación, tenemos que examinar los valores bajo nuestra motivación que hacerlo. Necesitamos incluir todo el mundo, especialmente algun menusválido o especial en cualquiera manera en el proceso, y examinar el contenido didáctico de lo que enseñamos en realidad.

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From TPR, NA and SALT to ACT: Effective Language Acquisition, American Style

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Abstract. In the opinion of the author, language-acquisition approaches, those which "play to the right hemisphere of the brain," may be divided into three categories: (1) physical, (2) creative, (3) assimilative. Insofar as current American methods are concerned, Total Physical Response (TPR) illustrates (l), the Natural Approach (NA) is a good example of (2), and SALT and ACT (Acquisition through Creative Teaching) are the best manifestations of (3). Dhority's ACT may be said to constitute an "ideal" combination of right-brain strategies for effective language acquisition since it creatively combines the essential elements of Total Physical Response, the Natural Approach, Suggestopedia and Suggestive-Accelerative Learning and Teaching.

* * * * * * * * *

If one has occasion to peruse current anthologies of "successful" language methods, one will probably notice that many of these are largely based on what is termed implicit learning, i.e., the student learns a language by engaging in physical or creative activity, through indirect attention or unconscious assimilation. In many currently used methods, language is not learned (or is not learned exclusively) in an explicit manner through the presentation of rules and drills; it is acquired implicitly in a manner similar to the way in which one absorbs information by watching television.

According to Stephen Krashen, language fluency comes from acquisition and this acquisition process is largely subconscious. A number of successful American methods for language acquisition have been developed in recent years, among them Total Physical Response (or TPR), the Natural Approach (or NA), Suggestive-Accelerative Learning and Teaching (or SALT), Acquisition through Creative Teaching (or ACT).

Language acquisition methods or approaches emphasize the importance of a "low-anxiety" environment, as well as the personality of the teacher and student/teacher rapport. The classroom atmosphere is non-threatening and there is constant positive feedback regarding student achievement. Learning by these methods is "holistic" in that the learning process contributes to the personal growth and satisfaction of the students.

Language-acquisition methods are based on the way in which children learn their native tongue, a "successful" approach in which listening comprehension precedes speaking which, in turn, precedes reading and writing. Such memory-enhancing and linguistic-structuring devices as games, songs, and play activity are utilized (or emphasized); frequent use may be (or is) made of role-playing and/or role reversal (in which the student plays the teacher).

Learning or acquiring a second language should be a "natural" experience. In language-acquisition methods, emphasis is placed on communicative competence and language materials are, at least initially, in the form of such realistic utterances as commands and dialogues. Materials used or topics discussed are based on situations students would normally encounter in everyday life.

In "modern" methods, language is perceived globally or in "chunks" or blocks. Attention to detail or "fine tuning" comes later. Language acquisition methods are based on implicit learning; to paraphrase Asher, "they play to the right hemisphere of the brain" (p. 2-25).

Methods for effective language acquisition - those which play to the right hemisphere of the brain - may be divided into three categories: 1) physical, 2) creative, 3) assimilative. While a number of methods and approaches incorporate physical activities into the language classroom, the method which best illustrates "physical activity" is Total Physical Response in which language and body movement are synchronized through action responses and the use of the imperative. According to Lynn Dhority, Asher has given us an "excellent tool for engaging our students' physical energies, so lamentably neglected in most educational settings" (ACT, p. 31).

According to its founder, James Asher, Total Physical Response (or TPR) is a learning strategy that is based on the way in which children learn their native language. TPR is based on the following principles:

1) Listening comprehension (as in childhood) should be developed in advance of speaking.

2) Understanding the foreign language should be developed through action responses and play activity. (The imperative is a powerful aid, according to Asher, because the instructor can utter commands to manipulate student behavior. Language and body movement are synchronized).

3) The instructor should not attempt to force speaking in a beginning class. (At a given point in time, the individual student will spontaneously begin to produce utterances).

Total Physical Response is a teaching strategy that uses the imperative form to teach vocabulary and grammar to beginning students. The commands are carefully sequenced so that only three or four new items are presented at once. Depending on class size, from fifteen to thirty new items can be presented during a fifty-minute class period. Students demonstrate comprehension of a command (or a series of commands) by physical performance . One word commands ("Jump!" "Stand!" "Sit!") quickly lead to increasingly complex sentences in the imperative form. As training progresses, playful, surprising, even "zany" commands may be used. Gradually, as the course proceeds, the students are requested, but not forced, to speak using commands, to use commands to manipulate the instructor's behavior and to respond to questions. Correction of pronunciation usually focuses only on global errors when the speech is (or would be) incomprehensible. Reading and writing materials are initially based on the commands, but the students eventually read short excerpts from newspapers and magazines. Many teachers in the United States begin the school year with TPR and then gradually integrate textbook materials (for example, dialogues and pattern drills) after the students have been exposed to an extended period of listening - at least fifteen hours. Most vocabulary and grammar concepts can be rephrased in the command format, especially those found in beginning textbooks. Indeed, with imagination, almost any aspect of the linguistic code for the target language - including verb tenses and abstractions - can be communicated through commands.

Asher believes that not all instructional problems in teaching a second language can be solved with one approach and that variety is essential to maintaining the student's attention and interest. In studies conducted in the United States, however, it has been found that consistently superior results in listening skills have been achieved by students using TPR over students using such other approaches as the audio-lingual method. In such languages as Spanish where there is a "fit" between orthography and phonology, there is a large degree of positive transfer of learning in TPR from listening comprehension to other skills such as speaking, reading and writing. Studies in the United States have also confirmed that physically responding to commands improves 1) short-term memory,

2) long-term memory, and 3) the ability to transpose linguistic elements in order to comprehend novel utterances.

Creative activities are a part of many communicative-based approaches and are featured in many of today's classrooms. It has been found by researchers such as Dr. Alfred Tomatis and Dr. Georgi Lozanov that songs are a particularly effective memory-enhancing and linguistic-structuring device. Games, play activity and role-playing are an essential part of Total Physical Response as well as of such methods as SALT and ACT which are derived, in large measure, from Suggestopedia. Resource books in humanistic language instruction, such as Gertrude Moskowitz'*Caring and Sharing in the Foreign Language Class,* emphasize the relevant, the personal and the creative (in 100 exercises and 10 categories): Relating to Others, Discovering Myself, My Strengths, My Self-Image, Expressing My Feelings, My Memories, Sharing Myself, My Values, The Arts and Me, and, Me and My Fantasies. Beverly Galyean's Confluent Approach, like Charles Curran's Counseling Learning, emphasizes personal growth and self-reflection in the language class.

Developed by Tracy Terrell, the Natural Approach (or NA) provides us with a very good example of a "creative" language methodology.

The Natural Approach is based on Krashen's theoretical model of five hypotheses:

1) The Acquisition-Learning Hypothesis which claims that adults have two distinct ways of developing competence in second languages: a) language acquisition or "picking up" a language, a process which is largely subconscious, and b) language learning or "knowing about" a language, which is the conscious, formal knowledge of grammatical rules and concepts.

2) The Natural Order Hypothesis which states that grammatical structures are acquired (not necessarily learned) in a predictable order; no conscious sequencing of grammar is necessary for successful language acquisition to occur.

3) The Monitor Hypothesis which states that conscious learning has an extremely limited function in adult second language performance; it can only be used as a monitor, or an editor.

4) The Input Hypothesis which states that we acquire (not learn) language by understanding input that is a little beyond our current level of (acquired) competence (i + 1); speaking ability "emerges" after the acquirer has built up competence through comprehending input.

5) The Affective Filter Hypothesis which states that the best situations for language

acquisition are those which encourage low anxiety levels and high motivation as well as self-confidence; a low filter means that the performer is more "open" to the input and that the input strikes "deeper." Student performers with optimal attitudes have a lower affective filter.

Following Krashen's hypotheses, the Natural Approach is based on the concept that the language classroom should be devoted to activities that foster language acquisition. Krashen and Terrell see communicative competence progressing through three stages: comprehension, early speech production, speech activities. Various techniques are used in each stage in the NA classroom.

The first principle of the Natural Approach is that comprehension precedes production, i.e., listening (or reading) comprehension precedes speaking (or writing) abilities. The starting point in language instruction is to provide comprehensible input to the students. In accordance with this aim, the instructor always uses the target language; the focus of the communication is on a topic of interest to the students; through gestures and other means the instructor always strives to help the students understand what is being said. The NA is based on the premise that new words are acquired when they are heard in an utterance that is comprehensible. Students in the NA must develop a reasonably extensive passive vocabulary in the early stages of instruction; Terrell and Krashen recommend a recognition level of 500 words before extensive early production is attempted.

The second general principle of the Natural Approach is that production is allowed to emerge step by step. These steps typically consist of 1) pre-production or response by nonverbal communication (as in TPR), 2) response with a single word, such as "yes" or "no", 3) combinations of two or three words, 4) phrases, 5) sentences, and finally 6) more complex discourse such as dialogues and interviews. In the NA classroom, students are not forced to speak before they are ready to do so. In addition, speech errors which do not interfere with communication are not corrected directly; Terrell and Krashen believe that constant correction of speech errors may lead to language learning, but not to language acquisition.

The third general principle is that the course syllabus consists of communicative goals. Classroom activities are organized by topic, not grammatical structure(s). Topics involve real-life situations and functions. While short, simple grammatical explanations may be used in the classroom, NA advocates claim that grammar (as well as vocabulary) will be effectively acquired if goals are communicative.

The final principle of the Natural Approach is that language activities in the classroom must lower the "affective filter" of the students. Topics must be interesting and relevant; students should be encouraged to talk about themselves, their families and friends, to recount their experiences, to express their ideas, opinions, emotions and feelings. The instructor must enjoy good rapport with the students and must create a "low anxiety" environment which is conducive to language acquisition.

The core of the NA classroom is a series of acquisition activities which introduce new vocabulary, provide the required comprehensible input, create opportunities for student oral production, and instill a sense of group belonging and cohesion that contributes to the lowering of the affective filter. Acquisition activities belong to four groups: affective-humanistic, information and problem solving, games and recreation, and content. Affective-humanistic activities comprise dialogues, interviews and visualization exercises. Problem solving activities include: tasks, charts, graphs and maps, advertisements. Word games, action games, contests and adaptations of television game shows constitute examples of recreational activities. Content activities could include: slide shows, panels, individual presentations, films, television reports, news broadcasts, guest lectures, readings and discussions on culture.

The Natural Approach is designed primarily to enable a beginning student to reach an acceptable level of oral communication. Reading and writing, however, can play an important role in the NA classroom. The Natural Approach allows reading to begin as soon as the students know enough of the target language to derive meaning from the text. Texts chosen must be at a suitable level of complexity and must be interesting to the students. Writing is included in a NA class to record and review vocabulary in the pre-speaking stage, as an integral part of an oral activity, as a practice in Monitoring (i.e., a check on the accuracy of output), as a practical goal.

It is claimed by advocates of the Natural Approach that communicative based approaches generally produce results superior to any cognitive or habit-drill based approach. Accounts of success with such approaches, including the NA, necessarily tend toward the personal, given the large number of variables involved.

The third category, assimilative, involves, among other things, relaxation and visualization exercises and special presentation of materials over an appropriate musical background. A number of communicative-based approaches involve or incorporate elements based on unconscious assimilation or indirect attention - among them, Soviet hypnopedia, the Tomatis Method and Sophrology. However, it is Suggestopedia and its derivatives which best illustrate the third category: voice quality, suggestion, peripheral stimuli, an atmosphere of psychological relaxation and special concert presentations are all used to enhance the "absorption" process.

As developed by Aleko Novakov at the Institute of Suggestology in the late 1960's and early 1970's, the original suggestopedic language class featured a relaxation session for unconscious assimilation of the lesson material. The session was divided into two parts: active and passive, with each part comprising twenty minutes, the ideal meditation period in Yoga. During the active part, the teacher presented the appropriate foreign language words or phrases with three different yogic intonations - declarative, whisper, loud command - while the students looked at the dialogue on the printed page and repeated to themselves (using inner speech) the appropriate foreign words and phrases. (The Bulgarian translation of each word group was read first - quickly and in a monotone). During the passive part, the teacher read the language dialogue a second time, but now in a soft, persuasive voice over a background of slow movements from baroque *concerti grossi* while the students, with eyes closed, meditated on the text. (The slow movements used in the original concert, excerpted from the chamber music for violin and/or strings of Corelli, Handel, Bach, Vivaldi and Telemann have, by definition, a rhythm of 60 beats to the minute, the ideal beat for meditation in Indian music). In the two parts of the session, the material was presented rhythmically on an eight-second cycle: two seconds - translation, four seconds - foreign-language phrase, two seconds - pause. The students were trained to breathe deeply and rhythmically in accordance with the teacher's voice and/or the baroque slow movements.

In the mid-1970's, another version of Suggestopedia was developed by Evalina Gateva at the same institute in Sofia, Bulgaria. As in the first version of Suggestopedia, the foreign language class in the second Bulgarian variant is divided into three parts: decoding or pre-session (i.e., presentation of new material), the session itself (divided into an active and a passive part), the elaboration or post-session phase (during which the material is "reviewed"). The second version places more emphasis than the first on such traditional elements as phonetics, grammar, reading, translation and testing. While the Gateva version may be more traditional than version one, it is also more artistic in that it incorporates or integrates into the lesson itself aspects of the various arts (music, painting, theatre, dancing, etc.) and makes considerable use of special "language" posters. The second version retains the psychotherapeutical aspects of the original suggestopedic language class (role-playing, games, songs, story-telling, etc.) but removes such yogic memory-training elements of the Novakov version as the three intonations of the active session, inner speech, muscle relaxation and rhythmic breathing. The special session of version two is divided into two concerts, an "active" one of classical or romantic music and a "passive" one of baroque music. The same language dialogue is read by the instructor during each concert.

Insofar as American adaptations of Suggestopedia are concerned, probably the best two are Suggestive-Accelerative Learning and Teaching (or SALT) and Acquisition through Creative Teaching (or ACT). Whereas SALT emphasizes scientific research, ACT focuses on creativity; however, the two methods, as we shall see, are nonetheless complementary.

In the introduction to the book by Donald Schuster and Charles Gritton, *Suggestive-Accelerative Learning Techniques,* we find the following definition of the SALT Method:

> [It] uses aspects of suggestion similar to advertising and unusual styles of presenting material to accelerate classroom learning. The essence of this technique is using an unusual combination of physical relaxation exercises, mental concentration and suggestive principles to strengthen a person's ego and expand his or her memory capabilities while material to be learned is presented dynamically with relaxing music (p. 1).

According to Schuster, Dr. Lozanov was the first to put all of these component elements together in "an integrated and highly effective learning procedure," viz. Suggestopedia (p. 1).

The SALT Method incorporates (and indeed, elaborates upon) the basic theoretical elements of Suggestopedia I (authority of the teacher and prestige of the educational institution, infantilization [or confidence and spontaneity of the students], double-planeness [the importance of the environment and the personality of the teacher], intonation [or tone(s) of voice], rhythm and rhythmic presentation of material, concert pseudopassivity [a state of relaxed alertness during the concert presentation(s)]). SALT also incorporates the three principles of Suggestopedia II: joy and absence of tension and concentrative psychorelaxation, the unity of conscious and paraconscious and integral brain activity (i.e., whole-brain learning) and the suggestive link on the level of the reserve complex (suggestion is used to tap the normally unused reserves of the mind for increased learning). The suggestopedic means of version two (psychological, didactic and artistic) are also a part of the SALT Method.

In addition to providing more detailed information on the ways of using suggestion in the classroom, the Schuster/Gritton book, influenced by the work of Milton Erickson, goes into greater depth than Lozanov's on the theoretical aspects of suggestion. As opposed to the commonly accepted technical definition of suggestion, i.e., the transmission or influence of ideas and their uncritical acceptance by the recipient, Schuster prefers a "humanistic" definition, viz. suggestion as indirect communication, indirection, hinting or intimating. Suggestion in the SALT Method is closer to suggestion as used in advertising or in the arts. In the SALT classroom, suggestion may be direct or indirect, verbal or nonverbal. Verbal suggestion may be direct (as in "learning will be easy for you today") or indirect (as in a truism such as "Sooner or later you are going to do extremely well in class"). (pp. 63 ff). Direct nonverbal suggestion comprises gestures and mime to get students to imitate the teacher; indirect nonverbal suggestion includes eye contact, manner of speaking, physical posture and location while talking in class (with reference to the teacher), peer success and peer pressure (with reference to the students), and the environment (with reference to the classroom). Regarding environmental nonverbal indirect suggestion, such elements as a semicircular arrangement of chairs, light colors, soft lighting and relaxing background music are important as they make the classroom more inviting for the students.

Suggestion in the SALT Method (as in Suggestopedia) also involves desuggestion and the overcoming of barriers that interfere with teaching and/or learning. Lozanov's barriers to communication, teacher-student interaction and accelerated learning (viz. moral-ethical, rational-logical and intuitive-emotional) are expanded by Schuster to include: 1) socially or culturally accepted patterns, 2) body language signals that are culturally instinctive, 3) subliminal communication, and 4) verbal confusion due to images generated by the recipient in interpreting the sounds received. The teacher has (or may have) barriers or psychological characteristics that interfere with successful teaching; the students have barriers that interfere with learning. Suggestion in its various forms (including auto-suggestion) can be used to work around student barriers to accelerated learning as well as teacher barriers to improved teaching. "The teacher's goal is to integrate all types of classroom suggestions with conscious and paraconscious elements skillfully combined to lead the students to expect that learning will be easy, fun, efficient and long-lasting" (*SALT*, p. 74).

The Schuster-Gritton book is also more detailed and straightforward than Lozanov's *Suggestology and Outlines of Suggestopedy* when it comes to the theoretical (as well as the practical) aspects of whole-brain learning. "Linguistic symbols such as language are generally associated with slightly increased cortical activity in the left cerebral hemisphere, while listening to music and visualizing a picture are associated with increased right hemisphere activity" (*SALT*, p. 74). Generally speaking, schools emphasize verbal or so-called left brain activities and neglect activities that appeal to or stimulate the right brain. According to Schuster, "research on teaching wherein more than one area of the brain is involved shows that both learning rates and retention can increase dramatically" (p.75).

In his discussion of general theories of brain functioning, Schuster elaborates on Lozanov's idea that multiple sensory inputs (auditory, visual, motor) improve memory and accelerate memorization. Teachers should emphasize the "interactive contributions of the right and left hemispheres to the mastery of any given skill" (*SALT*, p. 81) and use various modes of presentation in the classroom. Vocabulary, for example, should be taught orally, visually and through physical movement (such as that used in Total Physical Response).

As far as practical applications are concerned, the SALT Method follows the general outline of Suggestopedia I and II in that the lesson is divided into three parts: review of previously presented material, dynamic presentation of new material, repetition of new material to be learned during a "concert session" while the students are in a passive, but nonetheless receptive state. Students in a SALT language class (SALT is used, however, for all subjects and not just language) engage in role playing, games, songs and a final play; attractive, colorful posters and pictures decorate the classroom and/or present lesson points peripherally. During the "review" or "activation" phase, however, in addition to strategies taken from Suggestopedia, SALT uses techniques taken from American approaches such as Asher's Total Physical Response and Galyean's Confluent Education. The first, or "active" concert of Suggestopedia II is optional; if used, however, the students are encouraged to visualize images, whether teacher-prepared or their own. The second concert over baroque music, preferably the slow movements in 4/4 time as in Suggestopedia I, is considered essential for accelerated learning. (SALT students may use rhythmic breathing during this concert). SALT makes use of different kinds of music in the classroom: classical, baroque and "subject-appropriate" (e.g., German folk songs in a German class), thus following the dictates of Suggestopedia; however, in contrast to Suggestopedia, meditative music (or mood music) is used as a background for mind-calming exercises and guided imagery trips in a SALT class. According to Schuster-Gritton, the use of appropriate types of music helps learning. Music is a placebo, a relaxant but it also provides another association to stimulate memory.

According to the SALT approach, the teacher should create a favorable atmosphere for learning through suggestions in the form of positive statements as well as suggestions which appeal to the unconscious mind in the form of body language, attitude and expectations. In everything the teacher does and says, there should be a harmony between the conscious and unconscious, the verbal and the nonverbal levels. Guided imagery (for example, goal setting imagery) and visualization are incorporated into the lesson presentation. Through word and gesture, the teacher establishes and sustains a suggestive, positive atmosphere in which the students understand that effective learning will take place. While the teacher must teach, the students, however, must be in a mental and physical state which enables them to learn. Unlike many educational methods which stress the importance of the teacher and/or various kinds of audio-visual aids and equipment but which neglect to take into account student receptivity, the SALT Method lays great stress on the students. To prepare themselves prior to the presentation of didactic material (for example, just before the lesson begins or just prior to the "concert session"), they perform, optionally, various types of physical and/or mental relaxation exercises. The teacher's suggestions will be more effective if the students' minds are calm and if they are physically relaxed. According to the Schuster-Gritton teacher's manual, students learn better when they are relaxed and when they are in a non-threatening, secure situation. Learning is difficult when students are restless or tense and nervous.

In addition to transforming a Bulgarian system designed for teaching intensive language courses into one suitable for the teaching of various subjects in a normal American school situation and to providing a statistical basis for research into accelerated learning, the SALT contribution is one of providing a precise and valuable outline of relaxation procedures for use in the classroom. The preliminary preparation phase, considered so important for accelerated learning, is divided into three parts: 1) physical relaxation, 2) mental relaxation or mind-calming, and 3) suggestive set-up (pleasant learning [re]stimulation). The sequence of these exercises is important: physical relaxation should precede mental relaxation. (Physical relaxation exercises are considered especially necessary for restless and anxious students.) A state of physical relaxation makes it possible for students to relax their minds with mind-calming exercises which are either teacher-directed or self-directed (following upon teacher-given instruction). Suggestion, in turn, is more effective when a student is mentally relaxed. An exercise of pleasant learning (re)stimulation, such as "early pleasant learning recall," convinces the physically and mentally relaxed students that learning will be easy, efficient and long-lasting.

Since its beginnings in the 1970's, the SALT Method has been frequently, indeed continuously evaluated in field experiments in American public school classrooms and its individual components have been evaluated in analytic laboratory studies with college students. The subject matter in these studies has a wide range from reading, spelling and mathematics, science and art to beginning German and Spanish. Grade levels have ranged from first grade in elementary school to college freshmen. Studies consistently show that students trained with the SALT Method have significantly higher achievement scores and better attitudes than those in the control groups. The lab studies have provided significant support for the major component features of the method. Insofar as foreign language achievement is concerned, studies with tight experimental designs have consistently shown that the SALT variant of Suggestopedia produces a two or three times greater foreign language achievement than conventional methods.

Another successful adaptation of Suggestopedia to the American educational scene was made by Lynn Dhority, following upon his training by Georgi Lozanov and Evalina Gateva in Suggestopedia II in 1979. His method, called Acquisition through Creative Teaching, is described in detail in his book, *The ACT Approach*.

In the preface to, and the first chapter of his book, Dhority states that his method, Acquisition through Creative Teaching (or ACT) seeks to provide a holistic, whole-brain model for language acquisition in a positive and relaxed atmosphere and a multi-sensory environment. Dhority's approach is "heavily indebted to Lozanov" (p.18) and to Lozanov's belief that students have extraordinary, untapped learning capacities which can be brought out by a competent, personable teacher skilled in the proper use of suggestion in the classroom. ACT is based on the principal theoretical elements of Suggestopedia I (viz. authority, infantilization, double-planeness, intonation, rhythm and concert pseudo-passivity) as well as on the three principles (joy and absence of tension, the unity of conscious and paraconscious, and the suggestive link) and the three means (psychological, didactic, artistic) of Suggestopedia II. As we shall see, in practice, ACT also combines elements of both versions of Suggestopedia. However, Dhority's approach in both theory and praxis also incorporates "many invaluable contributions" (p. 18) made by American educators and researchers: Leslie Hart and his theories of brain function and brain-compatible education, Schuster and SALT, Bandler and Grinder and Neuro-Linguistic Programming, Robert Rosenthal and "Pygmalion in the Classroom," Stephen Krashen and his hypotheses about language acquisition, James Asher and Total Physical Response, Tracy Terrell and his communicative-based Natural Approach.

Dhority uses his ACT Approach to teach German at Levels 1 and 2 at the University of Massachusetts in an intensive format and with small classes (12 to 16 students). Classes meet for three sixty-minute periods (from 9 to 12:30 with breaks), five days a week for six weeks (90 hours total). Regular attendance is a must but the fear of failure is removed in Level 1, in particular, in that the course is graded on a pass/fail basis, with attendance guaranteeing a pass.

Following the example of Lozanov (and Rosenthal), Dhority lays great stress on the role of the teacher and on his/her ability to motivate the students in the classroom through the creation of a positive psychological atmosphere. The teacher must be competent in his/her field and must manifest a genuine enthusiasm for his/her subject area. While projecting a natural sense of authority and self-esteem, the teacher must show genuine interest in, and concern for the students as a group and for each individual student. Student-teacher rapport should be easy and relaxed. Group dynamics should be positive and supportive. In the cultivation of a positive presence in the classroom, the "evocative power" of words and images chosen by the teacher is very important (*ACT*, pp. 59 ff), but so, too, are such factors as attitude and mood, facial expressions, voice quality, intonation (for example "anchoring" as used in Neuro-Linguistic Programming [or NLP]), rhythm of speech, body language (such as NLP physical "mirroring"), and even dress. According to Dhority, the "messages contained in such unconscious forces can literally create success or failure in our classroom(s)" (p. 45). First impressions are critical when it comes to establishing good teacher-student rapport as well as a positive student attitude toward the subject that is to be taught. Dhority stresses the importance of welcoming the students to the class and of giving them, from the beginning, positive suggestions for pleasant learning. (These positive suggestions may be in the form of images and affirmations, guided visualizations, the-story-as-metaphor, relaxation fantasies, SALT early pleasant learning recall).

In accordance with the theory of Suggestopedia, Dhority emphasizes the importance of the physical environment in which the language learning is to take place. The classroom should be esthetically pleasant, attractive, colorful, comfortable, "engaging to the senses" (p. 44). Full-spectrum (as opposed to fluorescent) lighting should be utilized. To soften acoustics and provide a comfortable surface for games and relaxation exercises, the floor should be carpeted. Pictures (ethnic landscapes and cultural scenes), charts, maps and colorful posters hang on the walls. These peripheral stimuli are both esthetic and instructional and change regularly so that they are integrated with the lesson content. (Following Suggestopedia II, ACT makes great use of posters which blend language paradigms with decorative, visual shapes and colors. "Remarkable learning results" have been achieved when visual stimuli are integrated into the instructional environment without the instructor's drawing conscious attention to them [*ACT*, p. 77]). Living plants and/or fresh-cut flowers grace the room. The students are seated in a semi-circular or crescent-shaped arrangement in comfortable chairs (with head and arm support) and to promote greater student-student contact, they are encouraged to change seats every time they enter the room ("fluid seating" [p. 78]). The classroom has good ventilation, windows and plenty of natural light. Easels, flip charts and/or white boards with color markers are used instead of the traditional blackboard. A good-quality stereo music system is used to provide the various kinds of music used in the ACT Approach. (These include: baroque fanfares to introduce the class, classical and baroque music for the concert sessions, the music of Mozart and other great composers for low volume background music during the class itself, "subject-appropriate" music for songs and dances, mood or "New Age" music for relaxation and guided fantasies or visualizations). Video equipment is available for the taping of classes. When the students enter the room before the class begins and/or during breaks, they have at their disposal a refreshment area with hot water for tea, coffee and chocolate. All elements of the physical environment in the Dhority ACT Approach are meant to suggest a new, different and positive learning experience.

In accordance with Suggestopedia II, the Gateva version of Suggestopedia, the ACT Approach accords great importance to the text and, more specifically, to a text specially written for the course. The beginning language manual, which introduces 1,500 to 2,000 new words during the 90-hour Level 1 course, is written as a series of approximately nine "Acts" and comprises a coherent dramatic story with authentic characters and situations. The Acts are some 500 to 700 words long; the first, which is the longest, introduces some 500 new words. As in Suggestopedia, the Acts are written in a dialogue format, in parallel columns, with the target language in the left column and the native language equivalent in the right column. Following the precepts of the Natural Approach, there is no formal sequencing of grammatical concepts although earlier Acts are written with simpler, though nonetheless authentic language. Basic grammatical structures and paradigms with examples are presented in appendices and are used as reference materials by the students. The text is amply illustrated with images and photos designed to suggest and reinforce the content being presented. Unbound, the ACT text is contained in an attractive three-ring binder. Because new material can be withheld, suspense and interest in Acts yet-to-come is heightened. With this format, it is also possible to revise and supplement the text on a regular basis.

The ACT text combines language content with "embedded suggestions" at many levels to help the students learn (p. 87). (When the text is musically introduced to the relaxed and receptive students during the concert session, the "suggestions" will have considerable impact.) Direct suggestion is embedded in the text - for example, in introductory and instructional statements. Students are encouraged to enjoy the drama, the humor and participate fully in the proceedings. Indirect suggestions are also embedded in the text: characters in the drama encounter similar challenges and obstacles to the ones the students encounter. Lively, dramatic, filled (in accordance with the Krashen hypotheses) with a large volume of natural, authentic input and situations for conversational reenactment as well as positive suggestions for pleasant learning, the ACT text has as its purpose to promote language acquisition in every way possible.

The beginning German course in the ACT Approach begins with a "cocktail party" during which the new suggestopedically-inspired roles and identities are distributed to (or rather, are chosen by) the students. A list of professions or roles is presented on colorful charts and each student is offered a prop to accompany his or her choice (dancing shoes for a dancer, for example). Before the cocktail party begins, students are led through their first of many musical experiences by singing an identity song: "Ich bin ich." During the imaginary cocktail party itself, students make the rounds introducing themselves briefly in German. As in Suggestopedia, a playful, relaxed atmosphere is established, but one which has important psychological (or psychotherapeutical) implications; the students leave behind their old, "limiting" identities and assume new roles, ones which are "limitless" in possibilities for learning.

Normally, however, the ACT Approach follows the precepts of Krashen and Terrell in the Natural Approach as well as Asher in Total Physical Response in that comprehension should precede production, and production should be allowed to emerge in stages. According to Dhority, the reason for encouraging students to venture speech production within the first hour of the course has to do with the group bonding process and the building of teacher-student and student-student rapport as well as with the affirmation of the newly assumed student roles.

Apart from the initial "party," ACT uses TPR strategies, NA picture files and other listening comprehension activities during the first 10 - 15 hours of the beginning language course. (Words, phrases and diagrams are, however, written or sketched on easel pads with color markers and gradually single sheets of illustrated vocabulary and phrases are given to students to supplement classroom activities.) Following a "silent period," student speech production is then allowed to emerge in stages. (This is in direct contradiction to Suggestopedia but, following the theories of Krashen, Terrell and Asher, Dhority says he has experienced "even better results" by delaying the introduction of the text [or language manual] and the first real invitations for oral production until at least after the tenth hour of class [p. 84].)

Following the opening "cocktail party" and an initial period of listening comprehension activities based on TPR and NA during which considerable linguistic material is introduced, the ACT Approach generally follows the format of Suggestopedia in that the class is divided into three parts: presentation of new material, concert presentations, and activation phase (or period of review). Dhority calls the formal presentation of text material before the concert session the "global prelude" and says that it has two purposes: 1) to give a rapid preview of material and create a context for what is to follow, 2) to suggest indirectly to the students that what is coming is interesting, engaging and comprehensible. During the global prelude, the teacher acts out the content of the text using gestures, props, peripheral aids in the room (including posters with key phrases from the lesson material.)

When discussing the concert session, Dhority proclaims his agreement with Lozanov's theory that music creates a relaxed state and carries the material to be learned into the brain. (The ACT Approach is also in agreement with contemporary theories of whole-brain learning in which music is generally considered a "right-brain" activity and language an activity which appeals to or engages the brain's left hemisphere.) In his intensive language classes, Dhority uses the two concerts of Suggestopedia II (but not, however, every day; concert sessions are offered about every eighth hour of the course and are always structured to end that particular day's class). For the first or "active" concert, which he shortens from 50 minutes to 30, he prefers such classical composers as Haydn, Mozart and Beethoven to such romantic composers as Brahms, Tchaikovsky and Rachmaninoff. Insofar as the second or "passive" concert is concerned for the reading of the same lesson material, Dhority follows the dictates of Suggestopedia I in using only the slow movements from such representative baroque composers as Bach, Corelli, Handel, Telemann and Vivaldi. In a note, he says that, "in my own experience, the slow movements seem to sustain the relaxed atmosphere better" (p. 216). Dhority's "passive" concert lasts about 10 to 15 minutes, i.e., a shorter period than in Suggestopedia. In accordance with Lozanovian theory, the concert presentations constitute in ACT a kind of "ritual" (p. 101) and great importance is attached to their preparation and performance.

In his discussion of the activation phase (or review of previously presented material), once the period of listening comprehension is completed, Dhority essentially follows Suggestopedia II although he provides a better organizational framework than his Bulgarian sources of inspiration. Dhority divides the activation activities into two categories: primary and secondary. Used for a block of text approximately 250 words in length, primary activation activities are:

1) whole group choral echo/antics in which the students echo the teacher's model reading of the text, complete with expressive gestures and a vivid imagining of the images in the text as they speak.

2) role reading in twos and threes (the number reading depends on the number of roles available in that particular section of the text-dialogue).

3) individual or small group role reading for the class with costume props (which help keep the focus off the "real" personality of the readers).

4) comprehension check in which students, as a group, answer the question, "What does that mean in English?" (Although this activity is translation under another name, an exercise-like quality is avoided by the teacher's expressiveness and tone of voice).

In the early stages of the language course, as the major source of "comprehensible input," the teacher does most of the talking. As student comprehension increases, so, too, does student confidence and a desire to speak. The goal of the secondary activations in an ACT class is to provide authentic opportunities for communication, rather than drills and exercises. According to Dhority, this phase is characterized by "playful, imaginative, spontaneous ways of encouraging full and authentic receptive and expressive communication" (p. 109). The secondary activation phase, in contrast to the primary one, does not attempt to stay too close to the text. As described in *The Act Approach*, secondary activation activities are:

1) appeals to the imagination in the form of students' new biographies and "stories," as well as guided fantasies in the target language (for example, an imaginary trip to a foreign country) which utilize embedded positive suggestions and images.

2) props (including costume articles, especially hats), physical objects (these are used also during the early stages for TPR activities), pictures (picture files are taken from the Natural Approach), slides, videotapes, puppets (especially the humorous Onkel Fritz, inspired by Suggestopedia II, with whom the students are able to communicate more freely than with a real person such as the teacher).

3) singing, miming and dancing (these activities are used for linguistic purposes [for example, hand clapping for learning numbers, mime for learning verbs], to create a German [or ethnic] atmosphere in the classroom, and to encourage spontaneity on the part of the students.)

4) dramatizations (the dramatization of language material in interesting and humorous situations is basic to the Act Approach); as in other communicative-based approaches, short skits such as arrival in a foreign country, phone calls, changing money, a café scene, a taxi ride, a bus trip and so on, are frequently used.

5) games (which create a playlike atmosphere but which also facilitate linguistic performance); these include "playing ball" (from Suggestopedia), card games, Simon says, and so on. During the secondary activation phase, students bring to life the material they have received and encoded during the receptive, musical presentations. Although most of the new vocabulary is presented in the concert sessions, the activation phases (the secondary one, in particular) continue to offer new input. In addition to vocabulary, through authentic communication experiences and activities which "playfully stimulate the imagination" (*ACT*, p. 113), students learn intonation, timing and gestures - so important for true communicative competence.

While the ACT Approach is primarily interested in fostering language acquisition (as opposed to language learning) and Dhority states in his book that he is opposed to the current obsession with "testing, judging, measuring, evaluating and demonstrating" (p. 176), an obsession which he sees as having a negative impact on both students and teachers, Acquisition through Creative Teaching does not neglect such elements of the traditional language course as error correction, grammar, homework, evaluation and testing. Errors which would interfere with comprehensibility are corrected, but softly. Grammar is gradually introduced after 25 to 30 hours of concentrating on listening and oral skills; grammar points are first presented passively in the form of attractive, colorful posters which display structures and paradigms. Homework includes traditional exercises as well as such activities as reading over the texts studied in class just before going to sleep while listening to a tape of the second (i.e., baroque) concert presentation of the material. Dhority's and the students' subjective evaluations of very positive course results are backed up by videotaped records, results of the MLA exam in German and the ACTFL Oral Proficiency Interviews (OPI).

In the MLA exam in German, designed for students who have completed two semesters of college study, ACT students scored "excellently" in listening comprehension and speaking (and this in spite of the artificial contexts). Since 1985, Dhority has used the ACTFL OPI to evaluate ACT students after Level I and then again after Level II. The majority of ACT Level I students achieve an ACTFL Speaking Proficiency Level of Intermediate-Mid. Insofar as Level II is concerned, the majority of students in this course achieve the Intermediate High Level on the OPI. In the experimental ACT program conducted at Fort Devens, Massachusetts in the early 1980's for the United States Army, the results point to the superiority of the ACT pilot program over previous classes regarding the achievement of the language program's objective: achieving a level 1 or better on the Defense Language Institute Rating Scale. The pilot program's results were obtained in slightly less then 1/3 the time spent in the regular program. Although Dhority says he is uncomfortable with our society's "test" mentality, he demonstrates in his book that it is possible for the ACT teacher, not only to be creative but also to test, produce data, and prove methodological effectiveness.

According to media experts such as the late Marshall McLuhan, television has fundamentally altered the way in which students absorb information. The "modern" methods referred to or discussed in this paper are especially appropriate for use in today's classrooms as they are based, in whole or in part, on indirect attention or unconscious assimilation and bring into play the right and left hemispheres of the brain. In particular, in the opinion of the author, Dhority's ACT constitutes an "ideal" combination of right-brain strategies for effective language acquisition since it creatively combines the essential elements of Total Physical Response, the Natural Approach, Suggestopedia and Suggestive-Accelerative Learning and Teaching.

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Resumen. Según la opinión de la autora, acercamientos a la adquisición de lenguas, aquellos que "juegan" al hemisferio cebral-derecho, se dividan en 3 categorías: (1) físicas, (2) creativas, y (3) asimilativas. Del punto de métodos actuales Americanos, la Respuesta Totalmente Física ilustra (1) aquí, el Acercamiento Natural es un buen ejemplo de (2), y SALT y Adquisición por Enseñamiento Creativo (AEC) son las manifesticiones mejores de (3). El AEC de Dhority se diga que constituir una combinación "ideal" de estrategias derecho-cerebrales por la adquisición efectiva de lenguas desde que ello combina creativamente los elementos esenciales de la Respuesta Totalmente Física, el Acercamiento Natural, Sugestopedia y

Técnicas de Aprendizaje Sugestivo Acelerativo.

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Book review of Pedro R. Portes' book *Making Kids Smarter*. Reviewed by Donald Schuster

The author at the beginning defines intelligence: Learning how to learn, learning how to deal with information, plus doing logical creative things with that information. The author posits a model of Intelligence as the result of the Person's (child's) interacting with the Environment over Time +/- Special events. Then a parental process called "Matched Assistance" to facilitate a child's learning at certain points can lead to rapid increases in intelligence. To this end, the book provides an understanding of what is going on mentally in developing children, rather than presenting just "how-to" techniques.

Starting off with "how-to", the author recommends: Be knowledgeable yourself as parent, understand your (parental) role as key teacher of culture, know how the mind works in learning, learn what world reality model the child is using, realize the mind is like a garden (some plants [talents] with cultivation will develop whereas others will not). Then parents need to plan challenges for the child in daily routines.

Intelligence depends on developing concepts as mental tools and using them in different ways and contexts. Parents play a critical role in this process in their becoming aware of what the child doesn't know now, but needs to know next in order to learn. Parents can facilitate or hinder this, with or without awareness. Children typically respond better to one area (such as math) than they do to another (such as reading). When parents respond to and cultivate what the child is interested in, then intelligence is seen as a process.

Until age two, the child develops concepts and language, the foundation for later learning. For this, warmth, love and active stimulation by parents or concerned others are necessary. But the most malleable period for intelligence is afterwards. To summarize, first children learn to represent the world in their minds through concepts. Subsequent language development accelerates concept development, particularly through external verbal patterns.

While suggestions for working with children generally are minimized in the book in favor of understanding children theoretically, the author occasionally does offer suggestions. He does so along with presenting psychosocial stages of development.

An intelligent positive childrearing style protects the developing child's genius while enhancing it at the same time. The author discusses four typical styles of parenting: democratic-permissive, reasoning-sensitive, inconsistent, and protective. The author recommends the first and offers these parenting suggestions: Consider unusual possibilities for your children, reinforce self-direction and self-responsibility, observe and model persistence, be humble about surety that things have to be done a certain way.

Self-esteem is a key to intellectual development. How do you as parent do this? Foster self-directed motivation. Contrive occasions for discovery. Be aware what your child is doing; provide reinforcement appropriately. Manufacture challenges for intellectual development. Such a parental support system makes for smart kids.

The author considers creativity as separate from intelligence; creativity is defined as intelligence in action. Creativity is sensitivity to problems, flexibility in thinking how things can be seen and used differently, seeing unique possibilities, shifting from one viewpoint to another, evaluating the result. Nurturing creativity by parents can be accomplished in several ways: parental modeling of creative behavior, playing games with children to develop confidence and problem solving skills, brain storm solution strategies, list and evaluate alternatives. In sum, support and reinforce creative activity; invent your own pattern to do so.

Overall this reviewer has few quibbles with the book or its contents. My major quibble is with the title; it implies that the author and parents are going to "manufacture" smart kids. (My minor quibble is the occasional typo.) From the philosophy and tone of the book, I'm sure the author meant a title like "Helping to make kids smarter." I believe the author succeeded quite well in presenting and elaborating a different viewpoint to accomplish this for parents and teachers in raising kids: How to accelerate the learning of children, and turn them on to the joys of learning. If you have been following the philosophy of the accelerated learning movement, this book is for you. Get it, read it, apply it.

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